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VARIATIONS OF BLOOD PRESSURE IN DISEASES OF THE HYPOPHYSIS

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In the descriptions of hypophysary syndromes up to a few years ago no mention was made, or mention was only made in passing, of the state of the blood pressure. Even after the discovery of the hypertensive action of the extract of the posterior lobe this phenomenon was given practically no importance in human physiology or pathology. Thus in 1908 Parisot,[1] in his book on blood pressure and the endocrine glands, gives no data whatever on the behaviour of the pressure in diseases of the hypophysis. A few years later the blood pressure begins to be mentioned in the literature on these diseases.

Review of the Literature

We will give a brief summary of the data of some of the chief authors. Cushing[2] states that the pressure is generally low in hyperpituitarism, even in patients who appear to be quite vigorous. He mentions Phillips,[3] who suggests that hypertension may perhaps exist in the early phases of hyperpituitarism, and that it may disappear afterwards. (However, this is not the case in practice.) In hypopituitarism, according to Cushing, it is usual for the pressure to be low ; where hypertension occurs there are other circumstances which might explain this symptom: a lesion of the nervous centres, or hyper-suprarenal states. In his recent book (1933) he adds nothing to these observations.[4] Humphry and Dixon[5] consider that acromegalic patients have a high pressure. Kraus[6] does not refer to these data ; neither do Vincent,[7] Biedl,[8] Blair-Bell,[9] Sezary,[10] Marañón,[11] nor Lucien, Parisot, and Richard.[12]

According to N. Pende[13] the blood pressure in acromegaly is seldom high and is more often low, which may be influenced by a concurrent suprarenal insufficiency. Peritz[14] asserts that it is usual to find a high pressure, which is explained by the increase in the amount of blood. Although Zondek[15] is stated by many authors to favour the theory of the frequency and importance of high blood pressure in acromegaly, he really proceeds with great circumspection: "The pressure is generally high, but only slightly so ; it is exceptional for it to reach 20 cm. maximum or to exceed this figure. In certain cases it is low ; as low as 10 cm. maximum or even less." According to Bauer[16] there is no typical alteration of the pressure in acromegalic patients. Falta[17] mentions several cases, in great detail, of acromegaly with normal blood pressure. Atkinson,[18] in his book covering the whole field of acromegaly, refers to cases with high pressure (Alessandri, Claude and Baudin, Packard, Zondek), and to others with low pressure (Blassoe, Jung) ; but he does not give his own personal opinion. Borchardt[19] describes the arteriosclerosis of advanced acromegalic patients, who usually have a high, sometimes a considerable, pressure.

A more complicated hypothesis is that of Brenning,[20] in whose opinion the hyperfunction of the anterior lobe of the hypophysis, which is the cause of acromegaly, does not by itself produce a high blood pressure ; but it would do so if it coincided with gonadal insufficiency, such as occurs in climacteric acromegaly. Rolleston[21] refers to these observations of Brenning, and lays emphasis on the low pressure of the opposite syndrome —Simmond's cachexia. Kemp and Okkels[22] state that, although there is a tendency towards arteriosclerosis and varicose veins in acromegalic patients, the blood pressure is not usually affected. Holland[23] also confirms the normal blood pressure.

The Pituitary and Blood Pressure

We have given this list to show how widely the opinions of clinicians differ. However, the majority of these are not based on personal cases, and they are mostly copied by one author from another without further investigation. As a matter of fact, very little importance was attached to these data, as we state above, and interest was only aroused when it was shown that a low pressure was constant in the hypopituitary syndromes and a high pressure was very frequent in basophil adenomas of the anterior lobe—that is, Cushing's disease. These two facts have served as the basis on which has been developed a whole theory as to the intervention of the anterior lobe of the hypophysis in the normal regulation of the blood pressure. As a result of this intervention low pressures would prevail in cases in which the hormone is deficient and high pressures when the hormone increases. A natural consequence of this is that experiments were undertaken to show that high pressures occur in the other hyperpituitary syndrome—that is, acromegaly.

We have expressed our criticisms of this hypothesis elsewhere.[24] In our opinion there is no proof that this gland exercises such an intervention in the blood pressure nor in its pathological variations. The high pressure of the basophil adenoma may be explained by a concurrent hyperfunction of the suprarenal glands ; the low pressure of hypophysary cachexia by the coincidence of other lesions—probably the most frequent would be suprarenal insufficiency—and above all, a very poor general condition. With respect to the behaviour of the blood pressure in other hypophysary symptoms, we will set forth the results of our investigations. These refer to 138 clearly confirmed cases of hypophysary syndromes. This list does not include our cases of basophil adenoma (Cushing) as these have been dealt with in a separate paper.[24] They refer to the following states:

1. *Acromegaly.*

2. *Hyperpituitarism.*—By this we mean those cases of exaggerated osseous dystrophy which cannot, however, be diagnosed as real acromegaly. The diagnosis requires a very genuine accentuation of the deformities, accompanied by other symptoms. In many of these cases of hyperpituitarism we have found an enlarged sella turcica, although not with the same frequency and intensity as in real acromegaly. Several of these cases give the impression that they are elementary acromegalies.

3. *Giantism.*
4. *Dwarfism,* with the typical traits of dwarfism of hypophysary origin.
5. *Diabetes insipidus.*
6. *Genital adiposity,* with hypopituitary syndrome (Fröhlich).
7. *Hypophysary cachexia* (Simmond).
8. *Hypophysary tumours,* with no general syndrome—or at the most with a slight adiposity or suppression of menstruation.

The results of our investigations are set out in the following tables:

TABLE I.—*Acromegaly*

No.	Age	Sex	Blood Pressure	Other Conditions	Notes
			cm.		
1	55	F.	23—10	Aortitis	High pressure (above 15 cm. max.) 5 cases = 11 per cent.
2	47	M.	19—14	Aortic aneurysm; renal sclerosis	
3	63	M.	18—9		
4	32	F.	18—5	Aortitis	
5	47	M.	16—10.5	Aortitis	
6	52	F.	15—9		Normal pressure (between 15-11 cm.) 36 cases=81 per cent.
7	31	M.	15—7		
8	46	M.	15—7		
9	23	M.	15—6		
10	47	M.	15—8		
11	31	M.	15-6	Left gynaecomasty	
12	44	M.	14—7		
13	43	M.	14—6	Left gynaecomasty	
14	24	M.	14—7	Large varicose veins	
15	46	M.	14—8	Rhinorrhoea	
16	37	F.	14—6		
17	47	M.	14—6		
18	32	M.	14—8		
19	32	M.	14—9		
20	24	M.	14.5—8.5	Aortitis	
21	54	M.	13—6	Sciatica	
22	36	F.	13—6		
23	25	F.	13—6		
24	25	F.	13—8		
25	18	M.	13.5—5		
26	28	M.	13—9		
27	28	M.	13—8		
28	42	M.	13—5		
29	24	M.	13—9.5	Aortitis	
30	22	F.	12—8		
31	31	M.	12—8	Melanodermia	
32	48	F.	12—7		
33	40	M.	12—7		
34	34	F.	12—9		
35	19	M.	12—8.5		
36	22	M.	12—8.5		
37	40	F.	11—6		
38	29	M.	11—8		
39	55	F.	11—6		
40	44	F.	11—7		
41	36	F.	11—8.5		
42	18	M.	10—6	Asthma	Low pressure (max. below 11 cm.) 3 cases=6 per cent.
43	40	M.	10—8		
44	33	M.	9—7	Myxoedema	

Total: 44 cases.

TABLE II.—*Hyperpituitarism*

No.	Age	Sex	Blood Pressure	Other Conditions	Notes
			cm.		
1	40	F.	19-8	Hyperthyroidism; menopause	High pressure (max. above 15 cm.) 3 cases=8 per cent.
2	42	M.	17—9.5	Menopause	
3	42	M.	16—7		
4	21	M.	15—8	Epilepsy	Normal pressure (between 15-11 cm.) 29 cases=85 per cent.
5	50	F.	15—8	Diabetes; aortitis	
6	17	F.	14—8	Intersexuality	
7	14	M.	14—8		
8	30	M.	14—7		
9	57	M.	14—8	Aortitis; emphysema; headache	
10	24	M.	13—7	Migraine	
11	25	M.	13-6	Intersexuality	
12	32	M.	13—7	Epilepsy	
13	15	M.	13—7	Epilepsy	
14	14	M.	13—7	Migraine; menopause	
15	38	F.	13—10	Acrtitis; premature menopause	
16	24	M.	13—7		
17	25	M.	13—9		
18	33	M.	13—9		
19	32	M.	13—7.5		
20	28	F.	12—6	Epilepsy	
21	20	M.	12—8		
22	56	F.	12—6		
23	12	F.	12—7.5		
24	37	F.	11.5—7	Aortitis	
25	51	F.	11—6	Endocarditis	
26	12	M.	11—7		
27	17	M.	11—7.5		
28	27	M.	11—5.5		
29	27	F.	11—8		
30	23	F.	11—7		
31	23	M.	11—7.5		
32	16	M.	11—7	Gynaecomastia	
33	15	M.	10—8		Low pressure (max. below 11 cm.) 2 cases=5 per cent.
34	25	M.	10—5.7		

Total: 34 cases.

TABLE III.—*Giantism*

No.	Age	Sex	Blood Pressure	Other Conditions	Notes
					High pressure (max. above 15 cm.) 0 cases = 0 per cent.
			cm.		
1	33	M.	14—7	Melanodermia	Normal pressure (between 15-11 cm.) 6 cases=100 per cent.
2	11	M.	13—6	Fröhlich type of adiposity	
3	11	F.	13—5		
4	16	M.	12-8		
5	21	F.	12—7		
6	17	M.	12—5		
					Low pressure (max. below 11 cm.) 0 cases=0 per cent.

Total: 6 cases

TABLE IV.—*Dwarfism*

No.	Age	Sex	Blood Pressure	Notes
				High pressure (max. above 15 cm.) 0 cases = 0 per cent.
			cm.	
1	16	M.	11—5	Normal pressure (between 15-11 cm.) 3 cases = 27 per cent.
2	12	M.	11—5	
3	7	M.	11—6·5	
4	11	M.	10—5	Low pressure (max. below 11 cm.) 8 cases = 73 per cent.
5	7	M.	10—6	
6	16	M.	9—6	
7	14	M.	9—6	
8	16	F.	9—6	
9	17	M.	9—4	
10	6	M.	8—4	
11	16	F.	8—5·5	

Total: 11 cases

TABLE V.—*Diabetes Insipidus*

No.	Age	Sex	Blood Pressure	Other Conditions	Notes
			cm.		
1	48	M.	23—13	Aortitis. Both parents had high pressures	High pressure (max. over 15 cm.) 4 cases = 20 per cent.
2	38	F.	16—8	Hypophysary tumour	
3	50	M.	15—8		
4	58	M.	15—8	Multiple glandular sclerosis	
5	23	F.	14—8	Epilepsy	Normal pressure (between 15–11 cm.) 14 cases = 70 per cent.
6	17	F.	14—8		
7	36	M.	13—7	Hypophysary tumour	
8	42	M.	13—8	Hypophysary tumour	
9	12	M.	13—8		
10	45	M.	13—10		
11	34	F.	12—7	Hypophysary tumour	
12	55	F.	12—6		
13	26	M.	12—9		
14	34	M.	11—5·5		
15	32	F.	11—6		
16	44	M.	11—7		
17	28	M.	11—6		
18	7	M.	11—7	Vitiligo	
19	35	F.	10·5—7·5		Low pressure (max. below 11 cm.) 2 cases = 10 per cent.
20	25	F.	10—7	Multiple glandular sclerosis	

Total: 20 cases.

TABLE VI—*Fröhlich's Syndrome*

No.	Age	Sex	Blood Pressure	Other Conditions	Notes
			cm.		
1	53	M.	13—10		High pressure (max. above 15 cm.) 1 case = 7 per cent.
2	25	F.	15—10	Syphilitic aortitis	Normal pressure (between 15–11 cm.) 11 cases = 84 per cent.
3	42	M.	14—8	Hypophysary tumour	
4	25	F.	14—6		
5	43	F.	13—9·5	Aortitis	
6	25	M.	12—8·5		
7	19	M.	12—6		
8	17	M.	12—6		
9	23	F.	12—6		
10	15	M.	12—6	Gynaecomastia (acromegalic father)	
11	13	M.	11—7		
12	25	F.	11—5		
13	18	M.	9—5		Low pressure (max. below 11 cm.) 1 case = 7 per cent.

Total = 13 cases.

TABLE VII.—*Hypophysary Cachexia*

No.	Age	Sex	Blood Pressure	Notes
1	32	M.	cm. 16—6	Typical, in spite of high pressure. High pressure (max. above 15 cm.) 1 case = 25 per cent.
2	25	F.	13—7	Normal pressure (between 15–11 cm.) 3 cases = 75 per cent.
3	52	M.	11—6	
4	19	F.	11—6	
				Low pressure (below 11 cm. max.) 0 cases = 0 per cent.

Total: 4 cases

TABLE VIII.—*Hypophysary Tumour Without General Symptoms*

No.	Age	Sex.	Blood Pressure	Other Conditions	Notes
					High pressure (max. above 15 cm.) 0 cases = 0 per cent.
			cm.		
1	29	F.	14—9	Adiposity without loss of menstruation	Normal pressure (between 15–11 cm.) 5 cases = 83 per cent.
2	50	F.	13—8	Precocious menopause	
3	48	F.	13—8		
4	30	F.	12—6	Adiposity without loss of menstruation	
5	39	F.	11—7		
6	4	F.	7—4		Low pressure 1 case = 16 per cent.

Total: 6 cases.

Tables I to VIII are summarized in Table IX.

TABLE IX

Disease	Pressure	No. of Cases	Percentage	Average Age
Acromegaly	High	5	11	48
	Normal	36	81	33
	Low	3	6	30
Hyperpituitarism	High	3	8	41
	Normal	29	85	24
	Low	2	5	20
Giantism	High	—	—	—
	Normal	6	100	18
	Low	—	—	—
Dwarfism	High	—	—	—
	Normal	3	27	11
	Low	8	73	16
Diabetes insipidus	High	4	20	48
	Normal	14	70	31
	Low	2	10	30
Fröhlich's syndrome ...	High	1	7	53
	Normal	11	84	25
	Low	1	7	18
Hypophysary cachexia ...	High	1	25	32
	Normal	3	75	32
	Low	—	—	—
Hypophysary tumour without general symptoms	High	—	—	—
	Normal	5	83	37
	Low	1	16	4

Commentary

The above tables and the summary are sufficiently eloquent to make any comment unnecessary. It is obvious that changes in the internal secretion of the

hypophysis have no influence whatever on the blood pressure, since both states of hyperfunction and of hypofunction of the anterior and the posterior lobes have no connexion with uniform changes in blood pressure. The variations of pressure observed in our tables are merely the normal changes observed in any other group of patients, and are clearly due to causes which have nothing to do with lesions of the hypophysis. It will be observed that the higher pressures, in each of the diseases under study, generally correspond to older patients. The pressures for the average age coincide exactly with the average figures for that age, independently of the disease. In addition, with a few exceptions the highest pressures in isolated cases are partially explained by the concurrence of hypertensive vascular lesions (especially aortitis).

As stated, these statistics do not include the basophil adenoma of the hypophysis, which is generally accompanied by a high blood pressure. Our personal opinion, and that of other authors, that this high pressure is not due to any hypophysary change but to the concurrent hyperplastic lesion of the suprarenal glands, is thus confirmed by the data given, which appear to prove that hypophysary incretions have nothing to do with the regulation of the blood pressure.

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SEBORRHOEIC DERMATITIS*

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In dermatological nomenclature there are few terms which have been used more inappropriately than seborrhoea, and as a result have led to greater confusion of the clinical aspect of the subject. Originally used to designate excess activity of the sebaceous glands, it came to be appended as a descriptive adjective to catarrhal conditions affecting areas richly supplied with these glands. Finally, a prominent group of eczemas, which had no objective similarity or clinical relationship to the catarrhs designated seborrhoeic by the originators of the conception, were classified together under the term seborrhoeic dermatitis.

Seborrhoea, or hypersecretion of sebum, leads to certain cutaneous disorders—namely, premature alopecia, acne, and rosacea. The inflammatory catarrhal conditions attributed to seborrhoea range from ordinary dandruff (pityriasis capitis) to a moist eczema which may become generalized, and the closest association which any of these have with seborrhoea is that they very often begin on or in the region of the scalp. In a large percentage of cases they do not even occur on a skin which has a hyperactive sebaceous system. All these catarrhs are almost certainly organismal in origin, and the bacteria or vegetable parasites found in association with them, and presumed to be the causative agents, are also found as normal skin saprophytes. It is not surprising, therefore, that in a proportion of cases the two distinct types of such catarrhs are combined. The fact that in some cases the catarrhs occur on an oily skin is no argument in support of a seborrhoeic causation any more than an incidence in pigmented skins would favour a melanogenic aetiology.

An analysis of the varied descriptions of lesions which are included under seborrhoeic dermatitis reveals that it comprises two distinct clinical types of cutaneous reaction: (1) pityriasis, and (2) flexural eczema. Each of these may evolve in a definite direction and thus enlarge the clinical picture.

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Pityriasis

Ordinary dandruff, or pityriasis capitis, met with at all ages, needs no description. The addition of an inflammatory element to this affection, with the production of small medallion or petaloid-shaped dry red scaly areas (eczematides) which occur on the scalp, the presternal and interscapular areas, and are variously called seborrhoea corporis, flannel rash, seborrhoeic dermatitis, and seborrhoeide, is well known. Occasionally the inflammatory catarrh is widespread, but usually preserves its dry character. In many cases seborrhoea is conspicuously absent, and the patient volunteers the statement that his skin is abnormally dry. In spite of the erroneous application of the term seborrhoea (seborrhoea sicca to dandruff, seborrhoea corporis to the eczematide lesions) to these two disorders, they are clear-cut, recognizable in textbook descriptions, and are different stages of a common infection (probably yeast infection).

It is the moist eczematous forms included under the term seborrhoeic dermatitis which are the most confused, although clinically they constitute an important and well-defined group of eczemas. They arise spontaneously, have no connexion whatever with seborrhoea, have no necessary association with pityriasis, and harbour an entirely different flora from it. Lastly, the scalp is by no means the common point of origin, for these eczemas are essentially flexural in situation.

Flexural Eczema

In contrast to the dry patchy catarrhs associated with pityriasis the flexural eczemas exhibit a marked exudative character. By far the most common site of origin for this type of flexural eczema is the retro-auricular region, and the initial lesion is usually a fissure at the upper or lower end of the lobe of the ear where it joins the scalp. From this lesion a moist exuding eczema reaction spreads to involve the back of the ear and the adjacent surface of the scalp. The fully developed lesion is characterized by its clear-cut edge in the form of a segment of a circle, by a fissure surrounded by whitish sodden epidermis at the depth of the retro-auricular fold, and by profuse exudations from small pin-point holes (eczema pits) scattered over the entire inflamed surface. Fibrinous crusting is variable in amount. The extension of the

eczema takes place along well-defined paths to the parietal region, the adjacent part of the cheek, the sides of the neck, the eyebrows, eyelids, outer and inner canthi, the fold of the ala nasi, and the commissure of the mouth. The external surface of the lobe of the ear may remain free for a long period, and when attacked the disease is first located in the depths of the folds of the pinna.

Eventually the entire scalp may be involved and the skin converted into a dull fiery red exuding surface. Small outlying marginate patches may appear on the chest and back after a time as a result of dissemination of the infection, but by the time this has occurred other body folds (inframammary, inguinal, and intergluteal) have almost certainly become affected. The salient feature of the spread is that its chief incidence is to the folds of the skin, and this is nowhere better illustrated than on the side of the neck, where linear streaks of eczema develop along the natural folds of the skin in that region. Next to the flexures the condition localizes on areas covered with a strong growth of hair, and the spread to non-hairy flat surfaces occurs last of all. Ultimately the entire body surface may become involved in a generalized moist eczema as a result of coalescence by extension of multiple individual flexural eczemas. Even when generalization has taken place the most acute phases of the eczema are to be found in the body folds.

While the ears are the most common starting-point, any other body fold may be primarily or solely affected, the inframammary and intergluteal regions being the most common. In the latter region it constitutes one of the commonest causes of pruritus ani. When it affects these areas the appearance of the eczema is identical with that affecting the retro-auricular fold, and is characterized by the *symmetrical* involvement of both sides of the fold, the fissure at the depth of the fold, the clear-cut margin of the eczema in the form of a segment of a circle, and the exudative type of the reaction. Occasionally the condition may commence on the scalp following an impetigo (*vide infra*).

In addition to generalization by direct spread, sudden symmetrical involvement of the trunk and limbs may occur presumably as a result of absorption of toxic products from existing isolated lesions. The symmetrical involvement takes the form of an eruption of discrete papules, which may extend to form multiple patches of eczema. This process is analogous to the occurrence of a secondary cutaneous eruption in trichophyton fungus infections, tuberculosis, syphilis, and pityriasis rosea. It occurs in eczema due to external chemical irritants, and also profuse pityriasis capitis associated with mild inflammation, and this type of secondary rash is classed morphologically as an eczematide.

Fortunately generalization is an infrequent occurrence, and cases usually present the condition limited to the retro-auricular and adjacent facial folds, or the inframammary or the intergluteal fold.

The duration of the condition under treatment varies. Usually lesions limited to individual folds can be cleared up in from three to six weeks, but a percentage of cases are very resistant to remedies. Generalized cases take a long time to cure, and may persist for two to three years. In a small proportion of cases the affected skin seems to be in a state of extreme irritability, and the reaction may refuse to be calmed by any known soothing application for a number of weeks and ultimately respond to an application to which it seemed previously to show an intolerance. Another feature is the occurrence of sudden acute relapses for no ascertainable reason during an apparently successful passage towards recovery. When a cure has been effected recurrence is prone to take place in a proportion of cases.

Bacteriological Factors

The aetiology of the two types of catarrh just described which have been for so long associated with the term seborrhoea is indicated in a very suggestive way by clinical and bacteriological examination. The pityriasis type is associated with a heavy infection of a yeast organism, and when mild inflammation has supervened *Staphylococcus albus* is found in profusion. The nature of this yeast organism is not clear as its culture is extremely difficult, and the claims of those who have succeeded in culturing a yeast from the lesions have been disputed. Nevertheless the evidence is strongly in favour of an aetiological relationship between a yeast, *Staphylococcus albus,* and the disease in question.

The causation of the flexural lesions is clearer. Bacteriological examination shows the presence of staphylococcus and streptococcus, and by special procedures streptococcus can be obtained in pure culture. Emphasis has been laid on this last point as indicating that streptococcus is the causative organism, but beyond its isolation in pure culture with special culture media there is no proof of this. Much stronger evidence in support of the streptococcal origin of the eczema is its not infrequent development directly following streptococcal impetigo affecting the fold or its immediate vicinity. I know of no recorded attempts to reproduce this form of flexural eczema by means of streptococcus, and experiments which I have personally carried out in an attempt to produce eczema of the body folds with streptococcus isolated from this form of eczema occurring elsewhere in the volunteers have failed uniformly. Positive cutireactions to the toxin derived from streptococcus isolated from flexural eczema have been reported in patients suffering from the disease, but beyond this there are no data on the biological aspect of the eruption. In view of the fact that the presumed causative organisms can and do exist as normal skin saprophytes it is reasonable to assume that the eczema reaction is only evoked by them in presence of an acquired or congenital idiosyncrasy such as has been proved to exist with regard to chemical irritation.

Diagnostic Points

The differential diagnosis of pityriasis is clearly discussed in all textbooks and need not be dealt with here. Less is said about flexural eczema, and the following points might be stressed. (1) The clear-cut edge often marked by a collarette of epidermal scale: this differentiates it from chemical eczema, where the edge is diffuse and fades imperceptibly into the surrounding skin. (2) The almost absolute symmetry with which it involves the body folds: this is a differentiating point in regard to ringworm, a problem which rises principally in the inguinal region. Ringworm rarely shows symmetrical involvement of the folds, where the margin of the lesion, though clear-cut, is papulo-vesicular, and usually in the form of a series of arcs. Microscopical examination of the scales clarifies the diagnosis in doubtful cases.

Treatment

Pityriasis lesions yield readily to salicylic acid and sulphur, or oil of cade pomades, but to obtain permanent freedom from the lesions these remedies may have to be continued for a considerable time after apparent cure.

Infective flexural eczema is much less easy to handle. In general it may be said that greases are not well tolerated. This intolerance may only amount to lack of response or setback after ointments have been used

for a shorter or longer period, or it may be evidenced by exacerbation of the reaction each time grease is applied. This feature may seriously retard treatment, because even when the affected area appears to cry out for grease as a result of treatment with astringent lotions, etc., its application may be followed by disastrous results. A satisfactory routine treatment for the average case is to use boric starch poultices every three hours until exudation has ceased. Starch jelly is best applied to a body fold enclosed in a single layer of gauze instead of spreading it on a backing of linen. Irritation of the skin by hard edges of linen is thus easily avoided. When the lesions are dry one of the aniline dyes may be used as a varnish to reduce the infection. Probably the best of the dyes is gentian-violet, used as a 2 per cent. aqueous solution. Alcoholic solutions are not well tolerated, and for this reason certain of the anilines are not suitable. The application is made once daily for two consecutive days, and on the third day an ichthyol paste is used morning and night. The paste is removed before each fresh application by olive oil and then soap and water. If grease is not tolerated, starch poultices can be used every third day in place of the paste. The object of intermitting the aniline treatment is to obviate caking from repeated varnishing and the fissuring which would result from this. When the reaction has paled considerably with this treatment crude gas-works tar should be used. This is varnished on and talc powder applied immediately to accelerate the drying of the tar. The tar is allowed to wear off gradually with ordinary daily washing with soap and water and is renewed every few days. No attempt should be made to forcibly remove it regularly with olive oil. Lastly, one or two small doses of *x* rays may be necessary to clear the final dregs of the inflammatory reaction.

As alternatives, astringent aqueous lotions of 2 per cent. tannic acid, 1/2 per cent. silver nitrate, or 5 per cent. liq. plumb. subacet. fort. in calamine lotion may be applied every three hours as wet dressings. It may be necessary to try several of these in rotation, including starch, in very irritable and unresponsive cases. The areas should be watched carefully, and at the least sign of a commencing flare-up a change should be made in the type of dressing.

Generalized cases are treated in a similar manner, and it may be noted that the anilines, and also tar, may be safely applied to large areas of skin. Internal remedies are of little value, although in long-standing cases and generalized cases iron and arsenic may help. The diet is of some importance, and should be low in carbohydrate and have a high vitamin content, either included in natural foodstuff or added as concentrated preparations. The main consideration in effecting a cure is carefully chosen, carefully applied, and carefully watched local treatment.

Conclusion

The foregoing outline has been directed to the separation of two distinct clinical groups of eczema from a functional state of the sebaceous glands, and to classify them as definite types each with its particular aetiology and evolution.

The position might be tabulated as follows:

	Seborrhoea	Pityriasis	Flexular Eczemas
Cause	Endocrine; ? *B. acnes*	? Yeast; ? *Staph. alb.*	? Streptococcus
Complications	Premature baldness; acne; rosacea	Localized eczematide (flannel rash); generalized eczematide	Multiple flexures involved; generalization by continuity; eczematide

PATHOLOGICAL SLEEP

THE PSYCHOBIOLOGICAL INTERPRETATION OF A CASE

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In a recent case report Dott and Harrowes[1] rightly stressed the importance of assessing the part played by physical as well as by psychological and environmental factors in the production of a paranoid psychosis. While we do not necessarily agree with the aetiological value which they attached to the various factors ascertained in the case, their report is of considerable value, because it clearly demonstrates how unsatisfactory are dualistic conceptions in clinical psychiatry and how impossible it is to shut off "functional" and "organic" types of reaction in water-tight compartments, even if one permits oneself to use these terms for description purposes. With the growing recognition of this fact it seems a pity that the psychobiological conceptions of Adolf Meyer,[2] although by no means unknown in this country, are not more whole-heartedly accepted for purposes of practical interpretation and understanding of abnormal life-reactions arising from any set of circumstances.

Not only do Meyerian principles permit an unbiased evaluation of any factor which may influence the patient, but they seem to us to provide an intelligible link between the field of clinical psychiatry and the concepts of neurological functioning which have grown from the teachings of Hughlings Jackson and Sherrington. Meyer[2] acknowledges that his concept of the individual as a functioning biological unit, resulting from the integration of various "levels" of function, with something new emerging at each level over and above the sum of the levels below, owes much to Hughlings Jackson's well-known concepts of functional levels in the nervous system. "Mind" is regarded as the "subjective economizing function" of the individual as a whole, which cannot, of course, be understood except in relationship to the life-setting in which that function and its integral subfunctions are carried on.

There is no need here for dualistic mysticism or water-tight compartments of "functional" and "organic" forms of illness; but a simple study of what is happening at the various levels in a functionally integrated living thing, and an assessment of their value in maintaining or failing to maintain a "working agreement" as between the living thing and its cultural environment (Macfie Campbell)[3]—a simple record of fact undisturbed by passing philosophies and open always to receive addition to our knowledge. To get this assessment right the time relationship between disturbance of internal function and the various changes in the external load upon the individual as a whole is of paramount importance.

A case of pathological sleep is recorded here in which, in our view, the coincidence of acute encephalitis with a severe emotional trauma actually saved the patient from a deteriorating psychosis. It provides a striking contrast with the case of Dott and Harrowes, where a mere peripheral neuritis, coming when it did, was the starting-point, or at any rate the *point d'appui*, of a severe paranoidal psychosis.

Under a "functional or organic" philosophy it is quite impossible satisfactorily to reconcile these two cases as belonging to the same category, or indeed as belonging to any category at all. Yet each is an example of a biological failure, the milder failure associated with a

gross central nervous lesion, and the more severe one with a simple peripheral lesion at the sensorimotor level. That the application of Meyerian principles to each case renders it intelligible is surely convincing evidence of their practical clinical utility.

The literature concerning the narcolepsies has been already so admirably summarized by Kinnier Wilson[4] that it would be superfluous to attempt any recapitulation here. Levin[5] has added substantially to the reported cases in recent years from time to time. The pathological states associated with the narcoleptic-cataplectic series of reactions include among many other conditions, infections, endocrine disorders, changes underlying certain of the epilepsies and psychopathological disturbances, and, as Wilson points out, it is impracticable to isolate narcolepsy as a *morbus sui generis*.

Report of the Case

A single woman aged 26, formerly a nurse, suffered for three years. She was under our observation in hospital for nine months, the attacks of diurnal sleep lasting from an hour to several days, with occasional "toneless" attacks. She had epistaxis and spastic photophobia resembling oculogyric crises. There were changes in the cerebro-spinal fluid. The intelligence quotient was 75. Objective examination of psychic processes was undertaken by word association tests and the use of the psycho-galvanometer. She was of diminutive stature. The sugar metabolism was disturbed.

Family History.—She is the twelfth child of an epileptic psychotic mother and an alcoholic father. Four of her siblings died from tuberculosis.

Previous Personal History.—She had a healthy childhood and adolescence, and reached Standard VII at school. She subsequently lived at home, and refused to go out to domestic service. The home life was not happy on account of the father's drinking habits, and the whole family were extravagant and improvident. There were numerous quarrels. She was described as conscientious and industrious, sociable but sullen, bad-tempered and wilful, thinking that she "knew everything," and resentful of criticism or advice.

Onset of "Sleepy" Attacks.—In 1929, owing to financial stress, she went to London and worked, first as a ward maid in a hospital and then as a probationer nurse. Towards the end of 1930 she had acute appendicitis, and was operated on at the London Hospital. Just before her preliminary nursing examination (in the autumn of 1931), when she was feeling the strain of extra work, she heard that her mother had been certified insane, and this is said to have upset her very much. She began, almost immediately, to suffer from overpowering drowsiness, so that she was unable to keep awake on duty.

FIRST HOSPITAL ADMISSION

She was admitted to St. Bartholomew's Hospital on November 1st, 1931, complaining of abdominal pain, epistaxis, headache, and drowsiness. There was some photophobia on admission. The physical signs in the central nervous system were normal, including the ocular fundi. The blood Wassermann reaction was negative. She became more lethargic, and developed rigidity of the limbs. The cerebro-spinal fluid findings were as follows:

November 6th. The fluid was clear, with no clot on standing. The cell count showed 26 leucocytes per c.mm. (60 per cent. lymphocytes and 40 per cent. polymorphs). The protein percentage was 0.02; the sugar reduction was normal; the chloride percentage was 780 mg.; and the globulin was not increased.

November 8th. The cell count was 132 per c.mm. (98 per cent. lymphocytes and 2 per cent. polymorphs). An injection of 8 c.cm. of the patient's own serum was given intrathecally.

November 11th. The pressure was 170 mm. The cell count was 176 leucocytes per c.mm. (60 per cent. lymphocytes and 40 per cent. polymorphs). There were 24 erythrocytes per c.mm., and the protein percentage was 0.04. The sugar showed diminished reduction. The percentage of the chlorides was 700 mg. The globulin showed no increase. No organisms were seen in a Gram-stained film of the centrifugalized deposit.

A diagnosis of encephalitis lethargica was made.

During convalescence she had persistent spastic photophobia and retenton of urine—manifestations which were at the time thought to be hysterical. She was discharged on February 25th, 1932, as "Well, but still a mental case," and returned home, giving up all thought of further work. She remained well until August, 1932, when she had a return of her former symptoms.

SECOND HOSPITAL ADMISSION

She was admitted to a large provincial voluntary hospital on August 27th, following twenty-four hours' drowsiness and epistaxis. On admission she was very drowsy; the eyes were tightly closed, and she resisted efforts to open them. They turned upwards, but she could look down when asked to do so. No abnormality was found in the physical signs of the central nervous system. The ocular fundi were normal. The cerebro-spinal fluid findings were as follows: fluid clear, no clot; cells, 1 per c.mm.; protein, 30 mg. per cent.; glucose, 46 mg. per cent.; globulin absent; chlorides, 760 mg. per cent.; and the Lange curve negative. She was discharged on October 3rd with the diagnosis "? hysteria."

She developed a trance-like state in January, 1933, and was in bed at home in this condition for six weeks. The history states that this attack had a sudden onset, that she lay in bed with her eyes closed, apparently sleeping, but able to ask for anything she wanted, and enjoying having visitors. She was not able to stand or to feed herself. She went out shopping the day after she got up, and appeared to be quite normal. Towards the end of 1933 she became depressed and irritable, resenting being questioned in any way. She suffered for a short time from auditory hallucinations, hearing her name being called so persistently that she would go from room to room trying to locate the voice.

THIRD HOSPITAL ADMISSION

She again became drowsy and lethargic, and was admitted in this condition to the same provincial hospital on January 3rd, 1934. She was seen there by one of us (I. S.) a fortnight after admission. She was said to have been asleep almost continuously since admission, but to have been capable of being roused, although not completely, at least to the extent of being able to take food and attend to her toilet habits. On examination she was found to be asleep, but was aroused quite easily to apparently full and clear consciousness; she was able to converse, admittedly with a tendency to reticence, in an ordinary way. She gave a reasonably clear account of herself, and described in retrospect the auditory hallucinations mentioned above. She was in a state of complete muscular relaxation, and made practically no spontaneous voluntary movements save those of speech. She was fairly easily persuaded to stand up and walk. She appreciated that she was ill, and readily agreed to come to a mental hospital as a voluntary patient. Before one had finished washing one's hands she was apparently asleep again.

FOURTH HOSPITAL ADMISSION

On arrival at the mental hospital (January 18th) she was awake. Physical examination showed a height of 4 ft. 9½ in., and her weight was 7 st. She was of poor physique, pale and puny, and had a moderate degree of myopia; her teeth were irregular and carious. No evidence of disease was found in the cardiovascular, respiratory, or alimentary systems, and no abnormal signs in the central nervous system. Retinoscopy results were normal.

The serological findings were as follows. The Wassermann reaction was negative in the blood serum and the cerebro-spinal fluid. On January 31st, 1934, the cerebro-spinal fluid was clear; the Nonne-Apelt and Pandy tests were negative; the protein percentage was 20 mg. and that of sugar 65 mg.; there were 4 cells per c.mm., and the Lange gold curve was $000\frac{1}{2}\frac{1}{2}0000005$. On October 11th the fluid was clear; the two tests were again negative; the protein percentage was 10 mg., that of chlorides 750 mg., and that of sugar 92 mg., and the Lange gold curve was $000\frac{1}{2}\frac{1}{2}\frac{1}{2}000005$.

A blood count taken on March 7th, 1934, showed a moderate lymphocytosis. The red blood cells numbered 5,690,000 per c.mm., and the white cells 11,200; the haemoglobin percentage was 94, and the colour index 0.84. A differential count showed: polymorphs, 54.5; eosinophils, 2; small lymphocytes, 36; large lymphocytes, 4.5; monocytes, 3. The count was repeated on July 6th, and was normal, the red blood cells numbering 5,350,000 per c.mm., and the white

cells 9,600 ; the haemoglobin percentage was 95, and the colour index 0.91 ; the differential count showed polymorphs, 71.5 ; eosinophils, 2.5 ; small lymphocytes, 18 ; large lymphocytes, 4.6 ; monocytes, 2.5 ; and basophils, 0.

The glucose tolerance test on February 7th showed a delayed curve, and the hyperglycaemic index was 90[6] ; on March 6th it was 16. The blood urea test was 27 mg. On March 29th the urea clearance test gave a figure of 57 per cent.

X-ray examinations revealed that the skull and accessory sinuses were normal.

Mental Examination

Her general behaviour presents no peculiarities beyond a tendency to shy giggling and an over-compensation for her diminutive size, which shows itself in an exaggerated desire to excel in the physical culture classes held at the hospital and in a certain amount of posing when playing the piano. She is on friendly terms with those about her, but always on the fringe rather than in the centre of any social group, seldom initiating new ideas and apparently content to play the part of an appreciative audience. Since her admission to hospital there has been no evidence of the bad temper noted in the history.

The stream of talk is clear and coherent, but interrupted by unnecessary giggling ; there is a tendency to shy reticence. The affect is one of self-satisfaction and complacency, with absence of initiative and an acceptance of her present position with indifference. She states that she is " quite happy," and her favourite answer to any question affecting her welfare is " I don't mind."

Her content of thought is shallow and apparently restricted to the trivialities of everyday life. She describes herself as " an independent sort," by which she means that she " keeps her secrets to herself." She says that she is easily upset by quarrels, is self-conscious, and prone to blush. She has had no love affairs, and says that she is " not the sort to bother with that sort of thing." There is no evidence of pathological fantasy formation, and she is free from delusions and hallucinations.

Patient's Description of Attacks

She describes her sleepy attacks as follows: " long ones " when she feels ill and is usually worried or upset, and " short ones " which follow excitement, often hearty laughter. The latter are sometimes accompanied by " weakness in the knees," so that she is afraid of falling (although she has never done so), and are followed by slight drowsiness until after the next night's sleep. The attacks appear to her to be just like ordinary sleep, are unassociated with dreaming, and do not in any way interfere with her normal sleep.

She stated that before the first she had been very unhappy about her mother, and that the last attack before admission to hospital had followed a visit to her mother, who is bed-ridden and in a state of advanced dementia. (Incidentally her mother is the only person toward whom she displays normal affection.) She cannot account for the other two series of attacks beyond saying " It was rather miserable at home," and that there " had been a few quarrels."

Intellectual Functions

Orientation is correct in all spheres. No defect in memory was noted except for patches of amnesia in respect of waking moments occurring in the course of prolonged attacks of sleeping. She fails to subtract seven from one hundred serially ; is very poor on the ordinary retention tests ; and she made absurd errors in simple calculations.

The I.Q. determined by the Stanford revision of the Binet-Simon tests is 75, and the mental age is 12 years. The test shows a moderate degree of scattering.

The word-association test proved of interest, since she displayed a degree of perseveration together with a distractability, apparently in response to inner associations, which Jung and Riklin[7] find typical of twilight states.

EXAMPLES ABSTRACTED FROM THE TEST

(1) *Perseveration* (the stimulus words were consecutive in the test)

Stimulus	*Response*	*Time in Seconds*
Death	Fade	5
Tall	Garden	2
Open	Rain	2
Sick	Wind	1
Love	Sunflowers	3

(2) *Inner Distractability*

Stimulus	*Response*	*Time in Seconds*
Shame	Knitting	2
Fit	Tide	3
Money	Sunshine	2
Mirror	Tea	2
Day	Shop	2
Snake	Book	2

She is quite unable to account for these associations ; indeed, she became increasingly inaccessible throughout the test. Although amiable, she remained completely indifferent, and failed to co-operate in any way, thus showing a characteristic shrinking from reality because of the greater emotional value of her inner thoughts.

The psycho-galvanic reflex showed a generally diminished affectivity, with complex indicating responses to " mother " and " drink," clearly indicating the emotional value of the home situation.

Stimulus	*Response*	*Time in Seconds*	*G.D.*
Mother	I don't know one for that	40	1
Pretty	Nice	8	0.6
Drink	I can't think of anything	30	0.4
Naked	Cold	2	0.4
Home	Dark	3	0.6

Subsequent Attacks and Clinical Progress

After admission she had several minor attacks of diurnal sleep, of which the following are examples. The first followed immediately upon lumbar puncture, when, from being apparently in her normal health and up and about, she became drowsy, and eventually fell into a condition indistinguishable from normal sleep. She could be roused by ordinary stimuli but resented interference ; when roused she complained of headache and left-sided abdominal pain unaccompanied by physical signs. She remained in this condition for six days. She was then persuaded to get up, when she immediately became free from symptoms and resumed her usual activities. This sequence of events has been repeated when she has been confined to bed for other laboratory tests, but she is now induced to get up as soon as the test is over, without ill effect.

Other attacks have occurred in immediate response to laughter, and on one occasion, when she was found asleep in the forenoon, she affirmed that this was due to her " getting a bit excited thinking over some fun " that had occurred the previous tea-time. Whether this was so or not, no other precipitating cause was forthcoming.

Another attack occurred following her giving notice of her intention to leave hospital early in March, 1934. Her father had been worrying her to leave ; she gave notice chiefly in response to his wishes, and because she felt it to be her duty to keep house for him. She was, however, half-hearted and worried, and finally arranged to discuss the question with him on the following day. When the day arrived she " forgot " to keep an appointment with one of us, although reminded to do so, and went walking in the grounds with another patient. While out and carrying on an ordinary conversation she became suddenly intensely drowsy and felt her knees

giving way. Her companion stated that she had to support her and keep walking her on the way back to the ward. Once there she fell into a heavy sleep. When the father arrived he found his daughter the centre of attraction to all patients in the ward. She roused herself sufficiently to tell him she felt very ill, and allowed him to persuade her to withdraw her notice. She subsequently suffered from headache and malaise for forty-eight hours, at the end of which time she again appeared free from symptoms.

In June, 1934, she complained of pain and tenderness in the right parotid region and over the right mastoid; there were no constitutional symptoms, and repeated examination by the surgeon and the oto-rhino-laryngologist revealed no objective evidence of disease. For some weeks she insisted on wearing a scarf round her head, saying that she experienced severe pain if she left it off. She received the news of her mother's death in July with marked apathy, but later had two or three attacks of twitching of the right arm and shoulder.

There was a superficial breaking down of her appendicectomy scar on two occasions. The appearance of the wound suggested that this was self-inflicted, and the condition yielded readily to treatment when she was under strict observation.

In the autumn of 1934 she again had an attack of spastic photophobia, during which the eyes were turned upward but could readily move in any direction. This condition yielded to suggestion measures; in fact it was "cured" by boric lotion in a few minutes. She remained complacent and contented, singing as she performed simple household tasks in the convalescent villa of the hospital.

Comment

The most striking thing about the attacks of sleepiness is their purposive defensive nature. The first one saves her from the humiliation of failing in an examination which—with an I.Q. of 75—she is unlikely to pass; it also provides her, in sleep, with an escape from emotional trauma of her mother's frank insanity. On the cerebrospinal fluid findings at the material time there can be no possible doubt that she was suffering from an organic central nervous lesion. It would appear reasonable to accept the diagnosis made then that she was suffering from encephalitis lethargica. This is the crux of the satisfactory understanding of the case.

It so happened that when this ill-endowed woman most needed an avenue of escape, when she was on the verge of breaking her "working agreement" with her cultural environment, chance provided her with a temporary removal from the sphere of conscious activity by inflicting upon her an organic lesion which gave her no option but to retreat from the field of conative endeavour. It is unnecessary to indulge in convenient anthropomorphizing of the unconscious. She went to sleep not because she "unconsciously" wanted to do so, but because, by the very nature of the organic lesion, she could not have done anything else.

Whether or not Pavlov's theory of sleep[8] is consistent with Head's concept of the "vigilance"[9] of various levels of function waiting to take command of the "final common path"—a concept cunningly translated into psychobiological terms by Jelliffe[10]—here, there is no doubt that "something which happened" (that is, encephalitis) released certain "patterns of function" at the subthalamic and striato-spinal levels, so that they did in fact take command of the final common path and dominate the whole behaviour of the individual for the time being. Because of its time relationship to events in her environment this change in the *milieu intime* modified the patient's whole subsequent life.

The second and third "long attacks" followed unpleasant scenes at home. Note what had happened. She gave up nursing after the first attack, and reduced the load upon herself by returning to a domestic existence which was within her adaptive powers; but as soon as the load is increased by her having to face up to a domestic "scene" she has another attack.

It may be suggested that these were imitative of the first attack, and were examples of malingering. But the essential point is that she was now using the "pattern" of a previously inflicted organic lesion to provide herself with an escape from reality. Whether this was done consciously is, from the biological point of view, quite irrelevant; who is to say that behaviourists would be wrong if they suggested that this sleep "pattern" was becoming a condition reflex? That is, in practice, what it amounted to. The thing was becoming a habit, probably in the neurological as well as in the behaviouristic sense of the term.

Note that just before the onset of the third attack there was a brief period of hallucinosis, associated with irritability and depression, and followed almost immediately by a "long" attack, with stuporous features. A hint is here of a schizophrenic pattern taking command, but clinically different in that responsiveness was easily evoked on stimulation; she was sufficiently in contact with reality to look after her own comfort. One would not have been surprised had this girl developed schizophrenia, for there is undoubted evidence of a schizoid pattern in her; but chance, in the form of encephalitis, selected a narcoleptic rather than a schizophrenic pattern by which her emotional load could be rendered bearable.

The "short attacks" are difficult to trace in the history; but it is certain that they did not precede the first two "long attacks." As personally observed, they also were defensive in nature, with the possible exception of the one which followed "thinking over some fun." It is very striking that one of the few cataplectic or toneless attacks which she had in hospital arose on an occasion when she was going to be forced back into unpleasant reality by discharge from hospital. She could not have known of the clinical association of narcolepsy and cataplexy, nor of the association of these conditions with epistaxis. In our view, these considerations rule out malingering in the sense of conscious production of the attacks.

The fact that she had twitching—apparently involuntary—of the right arm and shoulder after the death of her epileptic mother is a matter for interesting speculation. Was it an identification in a known suggestible subject, or was it another coinciding of organic change and environmental circumstance?

Diagnosis

From what did this girl suffer? We do not believe that any static categorical diagnosis can give satisfaction. Encephalitis?—Yes, but that was not all. Hysteria or narcolepsy?—Yes, but on what basis? Mental deficiency?—Yes, but she was not so defective that she could not manage as a hospital maidservant. Was she psychotic? At any rate her behaviour was periodically such that she could not maintain her place in society, but what formal psychotic category meets her case? Add to this that she had an endocrine dyscrasia, and possibly an Adlerian mechanism in respect of her diminutive stature. We see how incapable are formalized diagnostic categories of rendering the case intelligible, and how easy it is to be side-tracked by specious over-valuation of transitory changes in the blood picture or in the sugar metabolism, so closely wooed by the "physiogenic" psychiatrists.

For descriptive purposes we might say that she suffered from " psychosis with gross brain lesion," or, in Meyerian terms, that an oligergastic individual had become dysergastic. The Adlerians would have something to say about a " will to power " ; the Freudians could scarcely fail to be lured by the obvious narcissism and mother-identification; while the sleep pattern would doubtless be seized upon by others as a survival of archaic hibernation. If she escaped from the clutches of the " septic focus " school with her carious teeth still in her head she would be fortunate ; but, notwithstanding the retention of these deadly poison producers, her lymphocyte count returned to normal in due course. Her stature and her sugar reactions would no doubt have proved of absorbing interest to the endocrinologists ; in fact, almost any school of psychiatric theory would welcome her case as a convincing demonstration of the validity of its teachings.

In the sense that there is truth in each of these theories we believe that they are all right—it depends entirely upon the aspect of the individual which one is considering. But the task of the clinical psychiatrist is to understand how the patient got into the condition in which she is seen ; only then is he in a position to determine what factors are capable of modification, so that the " working agreement " between the patient and the cultural environment is once again operative.

There is no need for ingenious theory; a simple chronological record of her life, together with a conception of levels of function and of integration, of the adaptative function of the nervous system, and of the final common path, appears to us to be sufficient.

Despite her gross organic handicaps she reached a stabilized condition in the convalescent villa of a mental hospital, remaining there of her own volition, doing useful work, happy and contented, enjoying parole beyond the grounds, and going to entertainments. She found, in fact, a new milieu with which her damaged adaptative mechanism could reach a working agreement, and which, we believe, she would never have reached if she had not been forced by gross temporary organic disablement to retreat from an endeavour quite beyond her natural capabilities. Who knows but that she too might have developed a paranoid schizophrenic state had she been stricken with peripheral neuritis instead of encephalitis lethargica.

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FRACTURE-DISLOCATION OF THE CERVICAL SPINE AND ITS OPEN REDUCTION

BY

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Recent circumstances have prompted me to publish the following case, which, though belated, has this advantage, that time has justified what was thought to be a dangerous experiment.

Brief Synopsis of Case

A man aged 21 sustained a crush-fracture dislocation of the cervical spine, causing root pressure and gross deformity of the neck. He was invalided from the Army. One year later an attempt at reduction by traction was made, and failed. After careful study on the cadaver the dislocation was almost completely reduced by exposure of the front of the spine and direct leverage of the dislocated vertebra combined by traction. For fourteen years he has followed the occupation of a van driver and salesman.

Clinical History

A private in the R.A.M.C., on May 8th, 1915, at Steenwoode, was marching at the rear of a column when he was run into by a car, which forced him into a sitting position. He was taken to hospital with loss of power in the arms, inability to move the neck, and a severe scalp wound. The scalp wound was treated at the hospital, but little attention was given to the neck, which he was told was sprained. On evacuation to a general hospital in England his neck was *x*-rayed, and it was then found he had a partial dislocation of the fifth cervical vertebra forwards. He was later discharged with full pension.

Towards the end of 1915 he was seen at the 1st Northern General Hospital for pension board. His condition was pitiable. He had pain in the neck, shoulders, and arms. His head was bent forward, so that his chin was almost on his chest and he had to support his chin with his hands, and had considerable difficulty in sitting or lying. He was ready to consider any form of treatment which might give him some relief, and was admitted under me at the 1st Northern General Hospital in April, 1916. It was proposed to attempt reduction by traction, and if this failed, as seemed likely after one year, an open operation was to be done. A poroplastic bed was made for the upper half of his back and head.

Operative Treatment

The first operation was performed on May 27th, 1916, under general anaesthesia. A sandbag was placed behind the shoulders and lower part of the neck, and with the head hanging over the end of the table strong traction was made on the head, with such manipulation as was considered advisable. It seemed doubtful if any improvement had been made in the position, although on *x*-ray examination the deformity seemed somewhat diminished. A trial exposure of the front of the fifth and sixth cervical vertebrae was made on the cadaver, and it was found that good access could be obtained to the fracture site and that direct leverage could be carried out.

A second operation was performed on June 10th, 1916. An incision was made from the angle of the jaw to the sterno-clavicular joint. The sterno-mastoid was retracted outwards and the carotid sheath and pharynx displaced mesially. The forward dislocation of the fifth cervical was readily recognized. The anterior common ligament was incised and the end of a flat metal bar, about one and quarter inches broad, inserted between the bodies of the fifth and sixth cervical. Direct leverage, combined with traction and manipulation, appeared to restore the vertebrae to a normal relationship.

The patient was immobilized for some six weeks in his poroplastic mould, and later allowed up with a cervical support. A further *x*-ray showed an almost complete reduction. He was before various medical boards, and was given a final award of 50 per cent. disability in 1922. He had previously started as a tobacconist, but his business failed.

About this time, as he was much improved, he started training for a van driver and salesman. Before this a medical examination was necessary, and he was at first

failed because of defective eyesight. Correction by glasses remedied this defect, and on being asked what was the matter with his neck he told the examining doctor that it was a "bit stiff." No detailed examination was made, and he was passed for training. This was completed, and for the last fourteen years he has carried out his work as a van salesman, starting and driving his van and loading and delivering packages himself.

Present Condition

He is now about to give up his present work on account of heart disease, which has incapacitated him on several previous occasions. He has a slight ache in the neck, worse after a heavy day's work. His arms and shoulders are strong (previous to the operation he could hardly push open a door). While sitting no abnormality of the neck is seen, but on being stripped the head is seen to be held slightly forwards, there is a slight kyphosis of the lower cervical region, and slight lateral deviation to the right. Flexion, extension, and rotation of the head are normal, while movements of the lower cervical spine are limited, and there is some thickening over the back of the spine in this region. He has an enlarged and grossly irregular heart.

Remarks

The change from his original condition is striking. Then he had considerable pain, stiffness of the neck, was unable to support his head alone, and able to walk only by supporting it with a hand on the chin and another on the occiput. He has been relieved of most of the pain and deformity, and has done full manual work for fourteen years; he is married and has a family, and but for heart disease would continue as a vanman. It is nearly twenty years since I have seen him, until he reported, at my request, in July, 1936.

Any success must be largely due to my friends, then Captain F. G. Armstrong, who was responsible for the anaesthetics, and Major H. Muir Evans, who assisted me.

ANATOMY OF PERIPHERAL SENSATION*

BY

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The punctate theory built up by v. Frey has not been seriously challenged; it is that the four elementary cutaneous sensations are distributed over the skin as a mosaic of points, each point being allocated to one of these sensations. It is a part of the punctate theory that there shall be specific receptors for heat and cold, irrespective of whether the temperature is close to that of the body surface or far removed from it.

Head divided the cutaneous temperature sense into an epicritic moiety near to the temperature level of the surface of the body and a protopathic (dyscritic) moiety further removed from it. This seems a difficulty, for we would then need receptors for cold, cool, warm, and hot. This is not impossible, though it is difficult to imagine why there should be separate receptors for heat and cold, since these differ physically only in molecular velocity. Some present-day histologists maintain that all neurofibrillae pass at the periphery into a neuroprotoplasmic continuum. Others emphasize that nerve endings are so various and transitional forms so common that form and position have no particular significance. Thus in their view nerve endings are to be regarded merely as devices for securing increased surface. All the real differences between naked and encapsuled endings disappear if these pass into protoplasmic continuity with one another or with the protoplasm of adjacent cells.

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The ideas of Head, even though they conflict with the punctate theory in some degree, are of the greatest importance, for he first enunciated in clear fashion the theory of the dual composition of the nervous system. The evidence upon which Head based this theory was derived mainly from the experiment of dividing one of his own nerves. Though this experiment has been repeated several times, no one has come to the same conclusions as Head. The basis thus rendered unreliable, the whole edifice has been regarded as insecure. The best evidence for Head's dualistic theory, found elsewhere in comparative neurology, has been assembled by Sir John Parsons. For instance, the double conducting systems of the spinal cord for contact, pain, and temperature on the one hand, and the localization of touch, awareness of position, and discrimination of points on the other—a double conducting system whose pattern can be traced in all vertebrates—is convincing evidence that can be obtained from comparative anatomy.

Electrical Investigation

The analysis of peripheral nerves has proceeded apace recently by means of electrophysiology. Anatomical analyses make it quite clear that nerves in passing from the cord to the dermis preserve their morphological characters. It might well be supposed that the diameter of a nerve would depend on the distance it has travelled, upon the number of collaterals given off, and upon whether the nerve itself was an original fibre or a collateral. At all levels, then, the nerve fasciculi contain both thick and thin fibres. If the frequencies of nerves arranged in 2-μ groups are plotted, a curve with two well-separated summits is obtained.

Adrian, from his investigations on the change of potential, rate of adaptation, velocity of conduction, and other features, divides nerves into two groups, while Gasser and others make three or more groups. There is general agreement that the finer fibres which conduct slowly and adapt slowly bear the pain sensation. The difficulty lies in the fact that such fibres cover morphologically those from less than 2 μ up to those of 5 μ or more in diameter, and in rates of conduction from 0.5 metre to 30 metres a second; the pain sensation group includes also exclusive pain fibres, as well as some which bear first the sense of contact and then pain. Thus there are difficulties in suggesting that these two main subdivisions can be fitted to Head's series of protopathic and epicritic nerves.

Histological Investigation

We have made use of large flat spreads of human skin stained while still living with methylene-blue. This has the advantage that a nerve fibre can be traced for long distances and all its subdivisions and endings can be inspected. This method dispels the idea of intermediate and transitional endings. It can be asserted that one nerve fibre bears only one kind of nerve ending, and that these are as uniform and as like each other as the flowers on the same stalk. As many as thirty-seven similar endings have been counted on the collaterals of one nerve fibre. There may have been more.

We are thus reduced to really a small number of endings. It is in the deeper, complex, highly organized, and encapsuled endings that the greatest seeming diversity occurs in different parts of the body, and it is to these that so many names have been applied until one has exclaimed, "So many observers, so many endings!" We would agree that the general observation of large areas of skin and the making of maps of all nerves and nerve endings that can be found therein reduces the anatomical complexity to limits which promise success to the task of associating these endings with the elementary cutaneous sensations.

Organs of Special Sensation

It has been generally assumed that the epidermis is the seat of pain and the dermis the seat of touch. This view, which has hitherto prevailed, has been challenged recently by Waterson. Waterson has emphasized that it is possible to shave off the epidermis, at any rate as far as the deeper layers of the stratum mucosum, without causing pain, while the exposed surface remains sensitive to touch. It has already been remarked that, whether one supposes the epidermis to be the seat of touch or of pain, these sensations are so closely packed at the surface that an abundant innervation must be present to act as their receptors. Such an abundant innervation is not to be found. Here and there, with great difficulty, nerves in the epidermis can be found. Most usually they are branches of medullated nerves continued to the stratum Malpighii, where they end often in the form of Merkel's corpuscles, or they are a continuation of Meissner corpuscles into the epidermis, where, again, they end as Merkel's corpuscles, or, especially in regions like the hand, where tactile acuity is high, large uniform fibres can be traced in the epidermis as far as the stratum granulosum. Thus what can be easily demonstrated in the epidermis is the continuation of endings like Meissner and other medullated nerve endings often regarded as incomplete Meissner endings, these with good reason always having been associated with touch. These are most easily demonstrated in regions where acuity is high and the epidermis well developed. The same observations apply to hairs and special structures, such as Eimer's organ in the snout of certain animals. These special tactile organs are also ones in which it is easy to demonstrate epidermal endings, as in the outer root sheath of the hairs.

That the nerves of the epidermis form an accessory organ of touch is made still more likely by the fact that it is possible to demonstrate the existence of a close meshwork of naked varicose fine nerve fibres in the subepidermal tissue, immediately below the stratum Malpighii. This mesh anastomoses, and also forms endings which terminate sometimes by entering the epidermis—though mainly it is a plexus below the epidermis. This plexus, apparently continuous, has been traced for a distance of six centimetres. It has all the characters that we might expect from the history, the physiology, and the quality of the pain sensation. By the analysis of the areas upon which this sensation has previously been indicated, cold has been found to assume the form of compact terminal subdivisions each of which ends in a blunt expansion. These are borne on the ends of medullated fibres, the diameter of which is about 7 μ. They lie quite superficially and near the stratum Malpighii in the subepidermal tissue.

In regard to heat we have not been so fortunate. The long latent period has made it certain that the heat receptor lies further from the surface. The large gaps between adjacent receptors make it more difficult to discover groups of endings, and the deep situation has rendered it impossible for us to use an *intra-vitam* stain. We have had to resort to sections stained with silver. In thin sections it is very hard to recognize actual endings. To map the heat spots we have used a metal junction and passed a constant current through this for a constant period, so that we have always applied to the skin the same amount of heat. Spots so found have been excised, and after staining with silver have been cut into sections. In such cases we have always found that our prick which marked the heat spot has perforated exactly the hair follicle complex passing into the vicinity of the sebaceous and sweat glands. We have found many nerve bundles and fibres and endings in the course of these pricks, but we are unable to say what type of endings, if any, are especially associated with heat. Further investigations are in progress.

It is a common enough observation, mentioned by many others, to find a thin fibre entering into a nerve ending, a fibre quite distinct from the medullated nerve that carries the nerve ending. This additional accessory ending has on the ground of its thin non-medullated character been reckoned as sympathetic. It may, however, and in our judgement even more probably, be regarded as an accessory nerve of pain, and may form the anatomical basis of the oft-repeated statement that excessive stimulation of any receptor may end in pain. It is not suggested that a receptor changes its sensation, but that these accessory fibres furnish the protective pain sensation. In the eye this function is supplied by the fifth nerve, which furnishes pain receptors and pain only to the eye itself. In the case of the internal ear the same function is undertaken by the seventh nerve. The accessory fibre exercises the same function for the hairs, Meissner corpuscles, Pacinian corpuscles, and other deep endings.

THE PROBLEMS OF EMBRYOLOGY*

BY

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Embryology may be, and often has been, regarded as a branch of comparative anatomy. According to this way of thinking, the fundamental subject of biology is the study of adult organisms ; this study can be divided into two main groups of sciences, which we may call the anatomical, which relates to the forms of animals, and the physiological, which relates to the physical and chemical mechanisms by which organisms perform the business of keeping alive. If we confine our attention to adult animals, it is clear that the phenomena dealt with by the anatomical sciences must be studied before those with which the physiological sciences are concerned, since the physiological functioning of any highly evolved organism is founded on the principle of specialization, by which particular organs are set apart to perform particular functions.

Even when we investigate the progress of a relatively simple chain of chemical processes occurring in a restricted region of the body, perhaps in a single cell, more and more evidence is accumulating to show that the progress of the reactions is dependent to a large extent on the morphological arrangement of the particles of the living protoplasm. I need only remind you of the numerous and important researches on the properties of biological membranes and the orientation of protein molecules in muscle cells, and of the recent demonstration of the position effect, by which the effect of a Mendelian factor, or gene, is shown to depend on its position on the chromosome relative to the other genes. In some cases we are already in a position to try to discover the forces which hold the molecules in these microscopic patterns, and we are here approaching one of the fields in which the debt is the other way round, and it is anatomy which must follow in the footsteps of physiological advances.

Among the anatomical sciences embryology is often relegated to a subordinate position. If we attempt to give an account of the facts of comparative anatomy in terms of the theory of evolution, the embryological data come in as interesting additional evidence. In the heyday of comparative anatomy, embryonic development was explained by reference to adult forms ; in Haeckel's theory of recapitulation the sequence of embryonic stages was compared with the evolutionary series of ancestors. But

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it must always have been clear, and was soon specifically stated, that in its development an animal recapitulated not an adult ancestor but an embryonic ancestor. Thus the gill slit of a human embryo does not resemble any sort of functional adult gill, but only the embryonic gill arches out of which gills are developed in the less highly evolved types.

The acceptance of this point of view involves giving up any attempt to explain embryological development in terms of adult structures, and accords to comparative embryology a position exactly equivalent to that of comparative anatomy. It is an explicit admission that animal form cannot be considered as a static thing, but that the changes which occur during development are essential to our understanding of it ; the time element cannot be neglected.

In recent embryological writings this point of view has been carried even further. It has been urged, for instance by Dalcq and Gerard in their recent textbook of embryology, that it is no longer profitable to attempt to reduce the various embryonic stages of different species to common fundamental types, but that we should try to homologize processes instead of forms. Thus the recent work on gastrulation, in which the movements of vitally stained patches of tissue have been watched, forces one to the conclusion that no comprehensive definition of gastrulation in vertebrates can be given in terms of structures such as the archenteron or blastopore, but that such a definition must be framed in dynamic terms—that is, in terms of the processes by which the three germ layers are arranged on top of each other.

The importance of this change of viewpoint is that it brings descriptive embryology much nearer to experimental embryology. Experimental analysis must necessarily deal with processes and not with static unchanging structures. So long as descriptive embryology considered the blastopore of a frog as an organ to be homologized with the blastopore of other forms, while experimental embryology considered it as a focus of a set of movements, there was a cleavage between the fundamental ideas of the two subjects which is now being repaired by the adoption of a more dynamic point of view in the descriptive branch.

The experimental analysis of development discovered its first causal principle as lately as 1918, when Spemann showed that in the newt the dorsal lip of the blastopore acted as an organization centre which stimulated the neighbouring ectoderm to undergo differentiation into a neural plate. It looked from the very first as though Spemann's discovery had revealed one of the general types of causation which are effective in embryonic development, and this supposition has been amply confirmed by later work. Organization centres have been discovered in most groups of vertebrates, in the birds and fish, and less certainly in mammals. In each case the organization centre is related to the process of gastrulation, not indeed in any simple way to definite blastopores or archenterons, but to the foci of the gastrulation movements, so that the comparative study of gastrulation may now be said also to involve a comparative study of organization centres.

Spemann pointed out in 1931 that the organization centre does more than merely stimulate the ectoderm to nervous differentiation ; it also determines to some extent what part of the neural plate shall be formed at a given place. These two functions of stimulation and of regional determination seem to be comparatively independent of one another. I could show, in 1933, that in the chick the organizer would induce the formation of a neural plate even when it was already accompanied by one neural plate of its own, so that the stimulation of neural development, which was later called " evocation," is not bound up with any tendency of the organizer to modify its surroundings so as to form a complete system. On the other hand, the regional determination does seem to involve just such an attempt to build a single complete unit, for which reason it has been called " individuation." Thus an isolated part of an organizer, if it is not too old, tends to become rearranged so as to induce a whole neural plate, the two combined then forming a whole embryo ; similarly two organizers placed near together tend to fuse into a single complete embryo.

Action of the Evocator

For a complete analysis of the process of induction we must consider, as well as these two aspects of the process, the condition of the ectoderm on which the organizer acts. The embryonic ectoderm will not react if it is too young nor if it is too old ; during the period when it is capable of reacting to the organizer it is said to be " competent," and we must assume that it is in some unstable state ; there must be two series of processes which may occur in it, one leading to neural differentiation and one to epidermal differentiation, and between these two the organizer decides.

Before we can consider how the competent tissue is acted on by the evocator and individuator components of the organizer, it is necessary to have some picture of the subsequent development of the neural plate and of the organizing tissues. The organizing tissues become the notochord and somites, and the neural plate develops into the neural tube with the various brain vesicles and so on. In both cases each particular part develops in a particular way ; development must consist of an integrated system of physical and chemical processes, and we could theoretically give a value to the processes at any given point. Such a system of developmental processes I call an individuation field ; and I also include among the processes which are referred to in the phrase " the individuation field of the organizer " the regionally specific properties of the organizer, which must underlie its determination of the regions of the neural plate which it induces.

Now the evocator part of the organizer has no regionally specific properties ; in fact evocation can be performed by chemical extracts of the organizer, in which the active substance is in perfectly homogeneous solution, so that no possibility arises for there being particular properties for particular parts within the inducing mass. If we could get the evocator to act on ectoderm which was isolated from any other organization centre, we should be able to find out exactly how far the neural plate individuation field is inherent in the competent ectoderm. This experiment has not yet been performed, at least in a satisfactory manner, but the evidence, such as it is, suggests that the competent tissue can probably produce a complete organ, with all its regionally different parts, even when acted on by a simple evocator.

This is perhaps rather a disheartening conclusion. What we are really interested in is the set of processes which cause the development of an organ of a particular shape, the processes in fact which we have summed up as the individuation field. Now the best we can do in the way of analysis of the organizer is to isolate the evocator component, which is just the component with which these processes have least to do ; they remain hidden either in the competent tissue or in the unanalysed residue which we have called the individuation field of the organizer.

There are two lines along which we may hope to advance towards their discovery. In the first place, the individuation field is not unalterable, but is to be recognized as the cause of the regulation of parts of the embryo to make whole units. We can hope in the future to

discover something about how this regulation occurs; it is significant that the regulation is towards a complete unit pattern, which seems to represent an equilibrium position for the processes involved. The equilibrium may perhaps be between the concentrations of diffusing substances, but perhaps more probably we shall find that what is involved is molecular orientation of the kind found in liquid crystals. Secondly, the possible chains of reactions which are open to the competent tissues seem to be very directly related to the genes which are contained in their nuclei, and it is possible that we shall shortly be able to discover some of the connexions which must exist between genetic factors and the forces which control development.

Conclusion

As a result of this discussion we reach the conclusion that embryonic development must be considered in terms of processes which are integrated together to form systems (individuation fields) which are characterized by positions of equilibrium to which they tend to return. The equilibria are, of course, four-dimensional ones; after disturbance the embryonic tissue does not return to a definite shape and then remain in that shape, but it returns to a normal sequence of shapes which it follows in its subsequent development. As to the nature of these processes, we have definite evidence that embryonic development involves the stimulation of competent tissues by evocator substances, and it is possible that an individuation field is constituted by diffusions of evocators from localized regions; but the main evocator which has been studied seems, as we have seen, to be rather little concerned with individuation.

MORPHOLOGICAL AND FUNCTIONAL HOMOLOGIES OF THE MALE AND FEMALE REPRODUCTIVE SYSTEMS*

BY

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The sexually undifferentiated embryo possesses both Wolffian and Müllerian systems, whose further development is dependent on gonadal differentiation and endocrine environment. In the male the Wolffian, and in the female the Müllerian duct form the groundwork of the definitive reproductive organs, the suppressed Müllerian duct being represented in the male by the sessile hydatid of Morgagni and the uterus masculinus, and the suppressed Wolffian duct in the female by the less constant epoöphoron, paroöphoron, and duct of Gärtner. The alternating dominance of these embryonic systems suggests a morphological sexual antagonism, and it is usually held that differentiation of the reproductive organs occurs under the influence of either "male" or "female" hormone, elaborated by gonads, the specific sexual differentiation of which is predetermined by the genic constitution of the zygote formed at fertilization.

The Gonads

The mechanism whereby the sexual bias genetically given the undifferentiated gonad is realized in either a definitive ovary or definitive testis has been shown by Witschi[1] to be one of induction determined by tissue environment. Germ cells differentiate into oögonia in the cortex and into spermatogonia in the medulla of the developing gonad under the influence of "inductors of female and male differentiation," which are elaborated in these regions. The inductors are mutually antagonistic, respectively promoting and inhibiting the spermatogenetic and oögenetic functions. The male inductor is the more powerful of the two. In amphibia it can bring about complete sex reversal of the germ cells. In birds, however, transformation of the vestigial right gonadal rudiment, following left ovariectomy, into a testicular structure is rarely accompanied by spermatogenesis—a fact indicating that the presence of germ cells is unnecessary for testicular differentiation. In mammals transformation never proceeds as far as spermatogenesis, and the "freemartin" gonad may, in spite of its general testicular structure, still contain oöcytes. Witschi suggests that the failure of the mammalian germ cell to respond to male induction is due to a too distinctly gonochorist-female zygotic constitution. If the gonads are regarded as their source, the occurrence of "male" hormone in the female organism, and of "female" hormone in the male, is anatomically understandable on the basis of gonadal homologies.

The Accessory Organs

The Wolffian and Müllerian systems develop specifically in accordance with the sexual differentiation of their associated gonads. Although their constituent cells are presumably biased in one or other sexual directions by the genic constitution of the zygote from which they are descended, their essential non-specificity is indicated by the fact that their differentiation in both genetic males and genetic females can be influenced by alterations of their sex hormone environments. Experimental parabiosis and grafting in amphibia show that in most instances it is the female system that is dominated by the male, sex reversal of the male reproductive organs being extremely rare. Reversals of the latter kind never occur in cattle and pig twins, freemartins always being zygotic females. It is possible to explain this fact on the basis of the view that sexual differentiation of both male and female accessory systems is under control of the secretions of the corresponding gonads.

Wiesner[2] has suggested an alternative explanation. According to him the differentiation of the female system is entirely controlled by the genic constitution of the zygote, whereas that of the male requires the participation of a "male" hormone. While "female" hormone is without effect on differentiating reproductive organs, male hormone can thus influence a developing female. Such effects as the provocation of mammary growth in male mammals by ovarian implants and extracts, which exponents of the more orthodox hypothesis adduce in support of the view that "female" hormone does in fact cause differentiation of undifferentiated organs, Wiesner explains as effects on tissue already differentiated.

The Sex Hormones

The reciprocal domination and repression of the Wolffian and Müllerian ducts implies, on the basis of the usual dihormonic view of sexual differentiation, a mutual antagonism of the "male" and "female" sex hormones. It is known, however, that the gonadotropic hormones of the pituitary are not sex-specific. Those gonadotropic hormones which in the female respectively stimulate follicular and luteal development operate in the male on the germinal epithelium and interstitial tissue.[3]

It has also been demonstrated that the ill effects produced in the gonads and accessory organs of one sex by the administration of the contrary sex hormones are not direct expressions of endocrine antagonisms, but indirect effects produced through the pituitary. Moore and Price[4]

* Paper read in the Section of Anatomy at the Annual Meeting of the British Medical Association, Oxford, 1936.

state definitely that "gonad hormones have no *direct* effect on the gonads of either the same or the opposite sex," and, furthermore, that "gonad hormones stimulate homologous accessories, but are without effect upon heterologous accessories." Whereas there appears to be little evidence which conflicts with the view that sex hormones do not directly influence the gonads, recent work has conclusively shown, in opposition to some earlier findings, that the "male" and "female" hormones may act not only on their corresponding, but also on the opposite reproductive tract.

The little known at present about the action of "male" hormone on the female reproductive system[5] cannot safely be built into an effective theory. Investigation of rats, mice, monkeys, ground squirrels, and dogs[6] shows, however, that the "female" hormone oestrin may cause profound changes in the male reproductive system. These newer findings do not necessarily conflict with Moore's second thesis as defined by him; they do, however, demand a revision of current ideas on the specificity and sphere of action of oestrogens, and they also suggest some modifications of our views on the embryology and phylogeny of the reproductive organs.

Although oestrone is not sex-specific, some workers have found that it has no effect when injected into normal mature male rats. There is experimental justification for the view that this is due to a neutralizing action of the male hormone elaborated in the testes of the experimental animals.[7] Progestin has been found to act similarly in relation to oestrin, and the explanation has been offered that it increases renal permeability to oestrin.[8] These hormone antagonisms, which have not been well investigated as yet, are of importance, not only because they uncover a previously unconsidered physiological mechanism, but because they have important bearings on the problem of the aetiology and treatment of benign enlargement of the prostate.[7]

Oestrin causes fibro-muscular growth throughout the male and female reproductive tracts. This response may be regarded as an undifferentiated effect of the hormone on tissues derived from the mesoderm of both the urogenital ridge and genital cord.

The epithelial changes induced in the male by oestrogens have been well studied in small rodents. The prolonged administration of the hormone induces hyperplastic and metaplastic changes (leading to stratification and desquamation) in the epithelium of all the reproductive organs, including the urethra and urethral glands, different regions varying in their sensitivity. Corresponding epithelial changes can be produced in the vagina, uterus, and urethra of the female. The internal epithelial sensitivity to oestrin thus appears to be confined to tissues derived from the Müllerian and Wolffian systems, and the urogenital sinus. Since urethral stratification occurs in response to oestrogens, and since there is embryological support for the view that the vaginal epithelium is often partly or wholly derived from the sinus, stratification in response to oestrogenic stimulation could be regarded in general as a primary response of tissue, in whose development sinus epithelium has played a part.

This view is well supported by the analysis of the changes induced by oestrogens in the reproductive tract of male monkeys,[9] and it assists in the understanding of the different types of epithelial response shown by different mammals. For it implies, what has been suspected by some embryologists, that sinus epithelium may invade tubular structures which open into the sinus, and that the different gradients of stratification in the reproductive organs in response to oestrogens may be regarded as indicating in part varying degrees of replacement. For example, the fact that little epithelial stratification occurs in the vagina of the rabbit in response to oestrin would imply, on endocrinological grounds, that it is derived mainly from Müllerian, and not sinus, epithelium.

A further embryological issue is raised by the oestrogenic sensitivity of sinus epithelium. Apart from the internal changes they produce, oestrogens act on ectodermal tissues (for example, mammary gland, feathers, sexual skin), which appear to be specifically sensitive to these compounds. The sexual skin reaction in monkeys appears to grade into that of the sinus epithelium, and the endocrinological evidence can thus be taken to support the view, put forward by some comparative anatomists, that the urogenital sinus is an ectodermal structure. Moreover, it is of interest also, from the point of view of the sensitivity of epithelium belonging to some parts of the Wolffian system, that certain authorities maintain that the primordial Wolffian duct is partly formed from, and phylogenetically related to, the ectoderm.

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Clinical Memoranda

A Fatal Case of Agranulocytic Angina

Although agranulocytic angina is now a well-recognized condition and many cases have been described in England, America, and on the Continent, it is still sufficiently rare to warrant interest, and the following account of a fatal case treated with "pentnucleotide" (Smith, Kline, and French, Philadelphia) may prove worthy of record.

Case Record

On July 13th, 1936, whilst calling about 6 p.m. to see the husband (who suffers from angina pectoris) in a boarding-house, I noticed that the wife (aged 60) looked ill. On inquiry it appeared that she had been suffering from severe pains in the limbs and joints for the past six days, but had continued her work of managing the establishment. She had no appetite, and "felt limp," but had no other symptoms. On examination she showed a temperature of 102.6° F., pulse 112, respirations 30. All her muscles were tender, but otherwise there were no physical signs.

About 10.30 p.m. I was rung up and told that she was very much worse. Her temperature by this time was 103.6°, pulse 120, respirations 32. There was increasing tenderness everywhere, particularly in the right hip and abdomen. I called in Mr. Molesworth, because of the abdominal tenderness, but he decided that the condition was not surgical, and queried typhoid fever. The patient was removed to a nursing home forthwith and put under typhoid precautions. The next morning she complained of a dry, sore throat, but had no physical signs except a soft apical systolic murmur, which had not been present on the previous evening.

Dr. L. P. de Costobadie kindly did a blood count, and returned the following result: red blood cells, 4,500,000; haemoglobin, 85 per cent.; colour index 0.9; leucocytes, 4,000 at 11 a.m., 2,100 at 5.30 p.m. Differential count: polymorphs, *nil*; lymphocytes, 89 per cent.; large hyalines, 11 per cent. A blood culture was taken at the same time (returned July 21st), which showed a pure culture of *Staphylococcus aureus*.

That evening Dr. Roker Evans saw her in consultation, and agreed in the diagnosis of agranulocytic angina. A supply of "pentnucleotide" was immediately obtained from London, and the first dose was given on July 15th. Further doses of 10 c.cm. were given intramuscularly night and morning until death. On July 16th there was a white slough on the uvula. This remained unchanged until death. On July 19th the buttocks became very red and showed signs of becoming gangrenous. The patient was moved on to her side, but on the next day two cracks, each about one and a half inches in length, appeared in the cleft of the buttocks. Each of these had a greyish slough at the base and looked gangrenous. On July 20th the temperature fell to 99° at midday, but the patient's condition did not improve. Another blood count was done, and showed: red blood cells, 4,200,000; white cells, 1,800. Differential count: polymorphs, 8 per cent.; lymphocytes, 90 per cent.; large hyalines, 2 per cent.; red cells normal. No normoblasts seen.

The general condition continued to deteriorate, and the patient died at 4 p.m. on July 21st.

Conclusions

1. There was no evidence of the condition being caused by amidopyrine or its derivatives.
2. Although the temperature fell on the fifth day, as recorded in the literature, there was no response in total white count, and very little improvement in polymorphonuclear cells.
3. This, then, was a case of the so-called "malignant" agranulocytosis, in which the bone marrow was so affected that there was no response to the stimulant.
4. Without a blood count this case would have been diagnosed as a straightforward septicaemia (and is, indeed, very nearly related to that condition), and doubtless many cases of agranulocytosis do escape diagnosis in this way.

Folkestone. Harry F. Griffiths, M.D.Camb.

A Fatal Case of Paraphimosis

The following notes of a fatal case of paraphimosis which came under my care recently may be of interest, owing to the rarity of the condition as a cause of death.

The patient, a man aged 43, was admitted to the Royal Portsmouth Hospital on May 15th, 1936. His doctor had been attending another member of the family, and it was casually mentioned to him that the patient in question had something wrong with his penis, but that they had not considered it serious until the tip of the penis went black.

On admission to hospital he was delirious and in a state of profound toxaemia. Temperature 101.4° F.; pulse 124; respirations 44. There was paraphimosis, causing a severe constriction, and an area of wet gangrene around the meatus. There was no retention and no sugar in his urine. No history was obtainable.

The same day operation was performed under gas and oxygen. The paraphimosis was reduced and a dorsal slit made. He was given anti-streptococcal and anti-gas-gangrene sera; venesection was performed and intravenous glucose saline given. This was followed by a great improvement in his general condition, but the gangrene continued to spread. On May 20th partial amputation of the penis was carried out, well above the gangrenous area, and suprapubic cystotomy performed. A marked improvement in the general condition followed this, the temperature and pulse returned to normal, and the patient appeared much better.

On May 25th the temperature and pulse rose and the gangrene started at the tip of the stump and spread with amazing rapidity. Septic spots appeared on his abdomen and thighs, and the gangrene spread to his abdominal wall. The toxaemia became more profound, and he died on June 1st.

I wish to thank Mr. O. Stanley Hillman, M.S., F.R.C.S., for permission to publish this account.

Stanley Way, M.R.C.S., L.R.C.P.
Late House-Surgeon, Royal Portsmouth Hospital.

Reviews

HEALTH INSURANCE

In a volume entitled *Security Against Sickness*[1] Mr. I. S. Falk of the Milbank Memorial Fund has brought together the facts, the history, and the principles of health insurance in systematic arrangement and effective presentation in a way that could hardly be bettered. The book deals with its subject as an insurance scheme, as an individual health scheme, and as a public health and welfare scheme, and admirably sets forth these three aspects in their relation to one another. Being an American presentation, it is primarily intended as a help towards what the publishers call "America's Next Problem in Social Security"; but it is so accurate, so understanding, so illuminating a study of systems operative in Europe and of the conditions and principles on which they are based as to be no less valuable to readers in this and other countries.

The first part of the book is concerned with the usual American method of approach to the subject—the costs of sickness and the group payment of those costs, through charity, through the sliding scale of professional charges, through insurance, and through taxation. The second part contains a comprehensive survey of sickness or health insurance in Germany, in Great Britain, in France, and in Denmark. The third part sets out the basis of the present American problem, and the fourth comprises some useful appendices in which are quoted reports, principles, conventions, or resolutions adopted by various public organizations such as the President's Committee on Economic Security, the American Medical Association, the Canadian Medical Association, the International Labour Office, and the Association Professionnelle Internationale des Médecins. None of these parts is a mere recital of statistical facts or figures or of crude or dogmatic conclusions drawn from them. Health insurance is treated as a branch of social insurance which is living, developing, dynamic, adaptable, and necessarily varying to meet different conditions and in the light of growing experience. This is particularly noticeable in the three chapters on "Health Insurance in Great Britain"—"A Description," "The Costs," and "The Present Position"—one of them including an account of the Scottish Highlands and Islands Medical Service and another giving the outline of the British Medical Association's scheme for providing a General Medical Service for the Nation, and of contributory schemes for hospital provision.

Perhaps the two most important, and certainly the two most suggestive, chapters are those entitled "Some Conclusions from Health and Sickness in Foreign Countries," and "Some Basic Principles for an American Program of Group Payment." They will repay careful perusal and detailed consideration by anyone concerned with medical and health insurance practice or administration in this country. The conclusions and suggestions are formulated and marshalled with remarkable ability and effectiveness, and will be endorsed with little or no qualification by those who have the widest experience of such administration and practice. Quoting from a leading article in this *Journal* (April 7th, 1934) the author regards health insurance as "a bulwark against the really socialistic movement to provide medical attendance by means of a whole-time salaried service," and he concludes, wisely for both American and British readers: "Not uncommonly the mention of health insurance raises in the minds of medical practitioners the bogy of State medicine or socialized medicine. The fear rests

[1] *Security against Sickness. A Study of Health Insurance.* By I. S. Falk. New York: Doubleday, Doran and Co., Inc. 1936. (Pp. 423. 4 dollars.)

upon a misunderstanding of the relation of medical practitioners to health insurance. Health insurance is not a system of medical practice. It is a system of paying the costs of sickness. It is everywhere and always consistent with the private practice of medicine." The book has a very helpful series of references at the end of each chapter and a good index.

TROPICAL THERAPEUTICS

A Handbook of Tropical Therapeutics,[2] by Colonel R. N. Chopra, is a large volume of about 1,700 pages. The author has not confined himself to the treatment of tropical diseases but has aimed at giving a comprehensive account of therapeutic methods suitable for use in tropical countries. The first two-thirds of the book is occupied by a systematic description of procedures and the last third by a dictionary of diseases and treatment, a section describing important new and now official remedies, and appendices which contain a large amount of varied information. The sections on tropical diseases include an account of the methods in use in the Calcutta School of Tropical Medicine, and this material is based on wide practical experience.

The treatment of tropical diseases has made rapid progress in recent years, but many important points are still controversial, and hence the author's conclusions are well worthy of attention. He considers, for example, that carbon tetrachloride is a valuable drug in the treatment of ankylostomiasis and is not unduly dangerous if used with proper precautions, a conclusion which is of importance in view of the strongly adverse opinions expressed by some authorities. The treatment of malaria is a subject now much to the fore, and a special section in an appendix is devoted to a consideration of the relative merits of quinine, atebrin, and plasmoquine. The author evidently believes that the value of the new synthetic remedies is becoming firmly established. The efficacy of atebrin in reducing the relapse rates and of plasmoquine in controlling the spread of infection is stressed. In his consideration of the economic problem of the cost of malarial treatment Colonel Chopra remarks that it should be possible to produce totaquin at a price which would lower the cost per treatment to one-tenth of this cost with quinine. Another section of interest is that on bacteriophage therapy. Here he adopts the attitude of cautious optimism, and concludes: "One thing can be definitely stated, and that is that the results of the trials so far are not against bacteriophage; there is evidence highly suggestive that bacteriophage is of value." He gives a full account of drug addiction in India to-day, and also a review of the possible methods of treating addicts.

It is impossible in a short review to give adequate description of the contents of a volume of this size. The points mentioned indicate that it deals with a large number of problems of great interest. The fact of chief importance, however, is that the author has compiled a systematic textbook of general therapeutics written from the point of view of the practitioner in tropical or subtropical countries. This is a noteworthy advance because, apart from the diseases peculiar to the Tropics, the relative importance of diseases common to all parts of the world differs in the tropical and temperate zones, and furthermore the manifestations may also be different. The labour involved in producing a volume of the size and quality of this textbook must have been very great, and the author has rendered a valuable service to those who practise medicine in tropical countries.

[2] *A Handbook of Tropical Therapeutics.* By R. N. Chopra, C.I.E., K.H.P., M.A., M.D., M.R.C.P. Calcutta: Art Press. 1936. (Pp. 1,748. Rs. 25.)

THE BLOOD GROUPS

French writers have not hitherto been among the greatest authorities on the blood groups. The book[3] by Drs. Dujarric de la Rivière and Kossovitch is, however, a first-class contribution, summarizing clearly the classical knowledge of the subject and incorporating the most recent results. The study of the blood groups is proceeding far beyond what could have been anticipated when Landsteiner first discovered the famous four groups in 1900. As this pioneer points out in a preface, the specificity of the individual reactions of human blood probably depends on carbohydrate groupings. This hypothesis links up the study of the groups with that of the serology of all animal cells, and that of the specific polysaccharides in bacteria. The study of the blood groups is therefore related to the recent advances which have been made in the understanding of the chemistry of immunological reactions. The use of the blood group tests as evidence in cases of disputed paternity and identity has had a limited negative value, but the discovery that new hereditary differences exist has opened the way to the ultimate goal, the individual differentiation of blood.

The present authors have written chiefly from the serological aspect. They lay particular stress on the heredity of the groups, not only because of its importance in legal medicine but also because it serves as a touchstone by which the validity of the innumerable theories about the groups can be assessed. Both are teachers, and they have devoted much attention to technique, and especially to exposing errors from which false conclusions can be drawn.

DISEASES OF THE INTESTINES

In the French treatise on medicine and therapeutics[4] two large volumes are devoted to the diseases of the intestines. In the new edition of the first of these the general symptoms and pathology are dealt with; in the second volume, which is to appear later, the affections of the separate parts of the intestinal tract are to be covered. The editor, Professor Carnot, has undertaken the sections at present under review, in each being aided by an able assistant. From a brief discussion of the flora of the digestive tract and the influence on it of various diets, and bacterial or vaccine therapy, the position now appears to be that more can be done by diet than by any methods of direct immunization. Even in intestinal obstruction there is little evidence that the severe constitutional symptoms are due to the intestinal bacteria or their directly produced toxins, though undoubtedly there is in these cases a toxaemia related to the absorption of substances like proteoses, formed in the intestinal wall possibly by the action of pancreatic juice. This toxaemia explains the hepatic and renal lesions which in their turn bring about a humoral state of which the main element is hypochloraemia.

After a short but adequate description of the methods of examination, the main disorders and diseases of the intestines are successively dealt with—constipation, diarrhoea, intestinal haemorrhage, ulceration, perforation, obstruction, and the effect of vascular changes. The next one hundred and fifty pages are given up to malformations. Of these, diverticula of the duodenum and colon, ptosis, gigantism, and dwarfism of the intestines are fully discussed. A further useful section on the malformations of the parietes of the abdomen gives an up-to-date account of eventration and hernias of the

[3] *Les Groupes Sanguins.* By R. Dujarric de la Rivière and N. Kossovitch. Paris: J. B. Baillière et Fils. 1936. (Pp. 249; 38 figures. 36 fr.)

[4] *Nouveau Traité de Médecine et de Thérapeutique.* Vol. xvii: *Maladies de l'Intestin.* By Paul Carnot and others. New edition. Paris: J. B. Baillière et Fils. 1936. (Pp. 676; 197 figures, 17 plates. 150 fr.)

diaphragm. A long and detailed description of the clinical aspects of intestinal parasites follows. The various worms and protozoa found in the intestine are considered, special attention being given in a well-written portion to amoebiasis. Professors Carnot and Rachet then discuss intestinal infections with dysentery, typhoid, paratyphoid bacilli, and spirochaetes, and the more chronic infections with tubercle, actinomycosis, and syphilis. The last section deals with tumours of the intestine. The whole ground is covered, but naturally cancer of the colon and rectum form the major portions.

The book is clearly and lightly written. The radiological illustrations are sufficient for students, and the text is elucidated by many useful line drawings. This volume remains a textbook rather than an encyclopaedia for reference, and no bibliography is appended.

MUIR'S PATHOLOGY

It is a pleasure to welcome yet another edition of Sir Robert Muir's *Textbook of Pathology*.[5] Among its author's manifold services to the study of pathology this volume is not the least, and it occupies a pre-eminent place as an authoritative exposition of the subject. Within a reasonable compass it achieves very comprehensive treatment, and the fact that it ranks as a work of reference by no means detracts from its value to the student, since much of the information less necessary from his point of view is distinguishable by small type and in other ways. Much new work has been incorporated in the present edition ; rewriting has been extensive in connexion with the subjects of anaemia, nephritis, and the experimental study of malignant disease, but other additions and alterations are frequent throughout the book, and have brought it thoroughly up to date. Among the most recent work which finds mention there are necessarily observations of which the significance is disputed, and here the balanced and mature judgement of the author is of peculiar advantage to the reader in securing a proper perspective, and in preventing speculative conclusions from gaining currency as established truth.

The arrangement remains unchanged, general pathology being treated first, and subsequently the diseases of individual systems and organs. The animal parasites, somewhat of a Cinderella in works of this kind, are happily disposed of by describing the more important in connexion with each organ which they infest. The numerous illustrations, each of highly typical material well photographed, have been added to, and illustrate the text profusely without interrupting it or occupying any undue amount of space. It is almost superfluous to commend this work to the profession ; it represents the surest means at our disposal of acquiring a sound knowledge of the nature of disease.

TAYLOR'S PRACTICE OF MEDICINE

Dr. E. P. Poulton is again responsible for the editorship and the main part of the fifteenth edition of *Taylor's Practice of Medicine*.[6] He is assisted, as in the previous edition which appeared six years ago, by Drs. Symonds, Gillespie, and Barber in the special sections on nervous, mental, and skin diseases respectively. The medical aspects of diseases of the nose, throat, and ear are collected into one portion, for collaboration in which the editor has been happy in choosing Mr. W. M. Mollison. An entirely new section on tropical diseases is contributed by Dr. N. Hamilton Fairley.

Many tropical diseases, which are mainly infective and now found almost exclusively in warm climates, at one time occurred extensively in temperate zones. There they have been eliminated or reduced as the result of applied hygiene and the improved standard of living, but they may be reimported into temperate zones by the return of travellers and residents in the Tropics, and by the greatly facilitated means of transport afforded by air travel. In this section, in that on diseases of the skin, and in the discussion of infectious diseases generally the arrangement is on an aetiological basis, beginning with those due to ultrafilterable viruses, then those due to bacteria, fungi, spirochaetes, protozoa, helminths, and other metazoa. There is thus a break in continuity, in that three sections contain references to infectious diseases. The index and cross-references make it an easy matter, once one is conversant with the arrangement of the book, to find any particular condition, but we question whether this type of detached presentation would be advisable in teaching. At the beginning of each of the sections methods of investigation and tests are described, so that the editor's claim, that within the scope of one book the student will find all that is needed as an introduction to medicine, is substantiated.

The present edition has been brought up to date and contains seventy more pages than the last, but the book is convenient to hold and is well laid out as regards the type and format. The *x*-ray illustrations chosen are typical and adequate. The work will continue to be a good textbook for students and practitioners, as it has been for nearly fifty years.

Notes on Books

Last summer the Royal Society of Tropical Medicine and Hygiene discussed at some length a paper by Dr. Cecil J. Hackett on boomerang legs and yaws in Australian aborigines. This was reported in our issue of July 11th (p. 92). The council of the society has now decided to extend its activities by publishing from time to time monographs on subjects of importance to those interested in tropical medicine and hygiene. The first publication of this series is Monograph I (September, 1936), in which Dr. Hackett expands, with copious illustrations, the account of his studies on the aetiology of boomerang leg, the geographical distribution of this condition and of yaws in Australia, and the radiological findings and morbid anatomy of boomerang leg. The monograph is published at 5s. by the society (26, Portland Place, W.1).

The little work entitled *Pornography and So On*,[7] by the late D. H. Lawrence, which forms No. 34 of the Faber Library, contains in addition to a number of miscellaneous poems, the character of which is sufficiently indicated by their title of " Nettles," two essays devoted respectively to the subject of pornography and obscenity and an introduction to painting. In the first essay, which represents an enlarged edition of a discussion with the late Viscount Brentford on the question of censorship, Lawrence differentiates between " the sneaking masturbation pornography of the Press, the film, and present-day popular literature and the creative portrayals of the sexual impulse that we have in Boccaccio or the Greek Vase paintings or some Pompeian art, and which are necessary for the fulfilment of our consciousness." In his second essay, in which he admits that he knows nothing about medicine and very little about disease, he boldly maintains, as the result of casual reading, that Anglo-Saxon existence has been thwarted and distorted by the introduction of syphilis at the end of the fifteenth century. Why the other countries in Europe were not similarly affected he does not explain.

[5] *Textbook of Pathology*. By Sir Robert Muir, M.A., M.D., Sc.D., LL.D., F.R.S. Fourth edition. London: E. Arnold and Co. 1936. (Pp. 994 ; 571 figures. 35s. net.)

[6] *Taylor's Practice of Medicine*. By E. P. Poulton, M.A., D.M., F.R.C.P. Fifteenth edition. London: J. and A. Churchill Ltd. 1936. (Pp. 1,136 ; 104 figures ; 71 plates, 16 coloured. 28s. net.)

[7] *Pornography and So On*. By D. H. Lawrence. London: Faber and Faber Ltd. (Pp. 174. 3s. 6d. net.)

PUBLIC HEALTH IN THE UNITED STATES OF AMERICA*

VI.—THE TEACHING OF PREVENTIVE MEDICINE

BY

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In the preceding articles reference has been made to the great variation in the size of administrative units in the U.S.A., the absence of standard qualifications for administrative officers in public health, the extent to which the services of private practitioners are used, either in their practice or as part-time salaried health officers, and the new provisions under the Social Security Act for fostering the training of public health personnel through the States. The latter movement exemplifies the normal development of governmental intervention in a field where voluntary effort has shown expenditure to be profitable, for the best training schools in America have been established by liberal capital grants and endowments from voluntary sources. The Rockefeller Foundation, in particular, has provided large sums for this purpose in the U.S.A., as in London and other parts of the world.

Post-graduate Instruction

Several medical schools offer facilities for short courses of study, running to a few months, for medical men or women engaged in, or intending to enter, the public health service. Vanderbilt University, at Nashville, Tennessee, organizes courses of this kind through its very efficient department of preventive medicine. But there is apparently a shortage of such facilities in some parts of the country, because New York State, where the Code demands that all health officers for communities exceeding 50,000 in population appointed after 1932 shall have had a year's whole-time post-graduate training, and those of smaller areas shall have attended a shorter approved course, has had to organize the latter type of training through its own department of health. It is to develop arrangements of this kind, if possible through existing institutions (not merely for medical but all other professional or technical officers), as well as to enable States to select promising entrants or young officers for more prolonged training, that the Federal grant of over one million dollars is intended.

The type of part-time study so common in the British Isles among candidates for the D.P.H. does not appear to be encouraged in the U.S.A. There is, of course, nothing comparable to our registrable qualification for health officers, each State deciding for itself what qualifications, if any, are required. It appears to be tacitly understood that the training of medical men who aim at responsible posts in large administrative units should extend over at least one year of whole-time study. Courses of this kind are arranged at the Johns Hopkins School of Hygiene and Public Health, Harvard School of Public Health, the Department of Public Health of Yale University, and at some other centres. The grant regulations of the Surgeon-General under the Social Security Act sanction assistance for training up to one year. While the widening provision of what might be called extended refresher courses for those already in the service has a lesson for us, perhaps the content of the curricula of the training schools mentioned is of more interest, since they have evolved without the prescription of a governing body like our General Medical Council, and have not yet, at least, fallen into a groove.

* This is the last of a short series of articles on public health in the U.S.A. contributed by invitation.

Johns Hopkins School of Hygiene and Public Health

The course of study may be divided into two parts, consisting respectively of required and optional subjects, each group occupying about a half-year. The former includes bacteriology, biostatistics, epidemiology, sanitary engineering, public health administration, and personal and social hygiene; in the second semester the student may specialize (under the guidance of an advisory board) in one or more of the departments of bacteriology, biochemistry, biology, biostatistics, epidemiology, helminthology, immunology, mental hygiene, physiological hygiene, protozoology and medical entomology, public health administration, and sanitary engineering. This arrangement obviously enables the school to cater for men and women who have mapped out a career for themselves in some special aspect of the public health as well as for those whose field covers the general management of a public health department. For training in the practical aspects of public health work the school is closely associated with a district health centre in Baltimore, serving a population of about 60,000, the medical officer in charge of which, although a recognized official of the city, ranks as an associate professor in, and derives his salary from, the school. A considerable number of the members of the staff of the centre are also carried on the school payroll. Completion of the course of study leads to a certificate in public health. A doctorate in public health normally requires two years' residence, the second being devoted to advanced study and investigation under the direction of the head of a department, as well as three months' work in a health department. A thesis must be presented. Students studying for a mastership or doctorate of science in hygiene, usually non-medical, are also accepted, as well as a large number taking short special courses.

Harvard School of Public Health

This school is less self-contained, depending upon the medical school for some of its departmental teaching—for example, bacteriology, parasitology, and epidemiology. Here again a full year of study is required for a public health qualification, in this case a mastership of public health, the first six months being devoted to set courses in public health administration, epidemiology, vital statistics, and sanitation, and, in the case of students not exempt by previous instruction, bacteriology, parasitology, and oecology. In the second six months specialism is permitted in one or more subjects, such as child hygiene (which includes infectious diseases), nutrition, industrial hygiene, and mental hygiene, or in one or other of the set subjects. Practical instruction is afforded through the health department of Newton, a dormitory town of Boston, the health officer of which is attached to the staff of the school as a teacher, and whose board of health has the professor of public health administration as its chairman. The mastership is awarded by examination. A doctorate in public health is also granted after (normally) two years' residence, the second being devoted to advanced study and the preparation of a thesis. A certificate in public health is given to students who attend a year's training but do not qualify for the mastership, many of these being non-medical. Non-medical students may also qualify for a doctorate of philosophy (in hygiene).

Yale Department of Public Health

Here a doctorate in public health is the qualification for which medical graduates are encouraged to enter. The course occupies two years of full-time study. The required courses include public health bacteriology, parasitology, principles of public health, principles of vital statistics,

personal hygiene, public health seminar, elements of sanitary engineering, industrial hygiene and sanitation, chemistry of foods and nutrition, public health administration, epidemiology, control of infectious diseases, sanitary law, and hospital clinics. Two months' whole-time practical field work is required, and a dissertation must be submitted on some aspect of public health. A mastership in public health is awarded to non-medical graduates, normally after a two-years course, and students are also prepared for a doctorate of philosophy in public health subjects.

The characteristic features of these American post-graduate schools may be said to be the insistence on prolonged whole-time study for a qualification, the freedom afforded to students for specialization, the facilities provided for those who wish to attend shorter courses on some special branch of public health study, and the opportunity for medical and non-medical scientific workers to study shoulder to shoulder.

Teaching of Medical Students

A great deal of attention has been devoted in recent years to the direction of the student mind to the importance of the preventive aspects of medicine and the medical arrangements of central and local governing bodies. Professor Leathers of Vanderbilt University, Nashville, has been especially prominent in this connexion, and his ideas have been taken up in other schools. The most interesting phase of this movement is to be observed at Vanderbilt and Yale. The idea that the preventive outlook should permeate the whole curriculum is generally accepted in America as in the British schools, but the extent to which it finds expression seems to vary to as great an extent. The question is how it is to be done. Co-operation between departments seems to be well developed in America, boards or committees of studies co-ordinating the teaching of preventive medicine and arranging interchange of teachers.

The extent and content of set courses in public health varies greatly. Broadly, though not invariably, the older and larger schools seem to find it more difficult to give the department concerned with hygiene or public health a prominent place in the curriculum. Under State pressure its prominence is increasing, for State health departments, as in New York, are prepared to accept as qualifying for smaller health appointments approved undergraduate courses of training in public health. The time devoted to set public health instruction of medical students in some schools is very considerable, running to nearly 200 hours at Vanderbilt, about 120 at Harvard, and 110 at Yale. No school in this country gives the subject such prominence. Field demonstrations play a prominent part, and the district centre system, which has already been mentioned as a part of the public health machine in Baltimore and which is a growing feature of health organization in other large cities, is being utilized for teaching medical students as well as post-graduates and nurses.

Clinical Case Studies

Undoubtedly the most interesting development, as seen at Vanderbilt and Yale, is the introduction of preventive inquiries and discussions into clinical case studies. A student allocated a patient for report is required not only to investigate the clinical condition and history of the case, but also to visit the home, perhaps the place of work or the health department, inquire into all the economic, social, housing, and occupational circumstances, and to ascertain what facilities of a statutory or voluntary kind existed for the prevention of the disease or the alleviation of the distresses attendant upon it, and the extent to which these had been utilized. In this he has the help and advice of the social service (almoner's) department. When his report is under discussion not only the clinical teacher is present but also a member of the staff of the department of preventive medicine, the social service worker, and sometimes the local authority officer concerned. This system is said to be completely reversing the old apathy of the medical student toward public health, and, incidentally, to be turning the minds of many of the best of the young graduates to a public health career.

Facilities for visiting and studying American public health were afforded through the Health Organization of the League of Nations and the American Public Health Service.

It would be impossible to acknowledge adequately my indebtedness to all those in America who have furnished the information on which these articles are based, but apologies may be made in advance for any inaccuracies which may have crept into descriptions of a system so vast and complex.

INCOME TAX CODIFICATION

COMMENT ON THE DRAFT BILL

We have received a copy of a report prepared by a special committee of the Income-tax Payers' Society dealing with the proposals embodied in the draft Bill put forward by the Government Committee. The professional standing of the special committee is sufficiently indicated by the fact that its chairman is a former deputy chairman of the Board of Inland Revenue. The Bill was the result of over eight years' consideration, and the ground covered is so extensive that the report before us rightly restricts its detailed criticisms to those clauses which "directly and materially affect the taxpayer." We propose to follow that example still further and restrict our comments to those suggestions which similarly affect the medical profession.

At first sight a definition of residence hardly seems within that category, but, since so many men take appointments abroad and return for longer or shorter periods, it is relevant to point out that the report suggests that in that connexion the proposals go far beyond the present practice. As a consequence a man taking a furnished house here for three months would be deemed to be a resident, though he himself spent only a week here. That is undoubtedly harsh, and will no doubt receive the special consideration of the authorities before the Bill is introduced into the House.

Bad Debts and Other Matters

The question of bad debts is a constant source of trouble unless it is avoided by the cash-basis method of accounting. Where allowance is due the Bill proposes that it shall be made for the period in which it "is discovered to have become bad." It is pointed out that a taxpayer may prefer to credit a debt in full in his books though he has reason to doubt whether it is at least wholly good. In such a case it would apparently be necessary for him to claim some special allowance for such debts, lest in a later year he is told that they cannot then be allowed. Probably the point is one which would not often arise in medical accounts.

The Bill contains a clause aimed at a fairer distribution among successive rents of the tax paid on a property—at present there is no method by which the benefit of the repairs allowance is divided between the superior landlord and any others who may have to help with the cost of maintenance of the property. The report gives a number of examples, from which it seems clear that the attempt will not be entirely successful and will sometimes be complicated in its results.

On the question of partnerships the law seems in the main to be left unaltered, but the words adopted may be capable of imposing a "joint and several liability to pay the tax," whereas at present the liability is a joint one only, though execution may be levied on any partner when the necessary order has been obtained. In connexion with the proposed abandonment of the obsolete

system of church-door notices, the Bill provides a penalty of £50 for failure to give notice of liability where a person has not received a particular notice requiring him to do so. On this the comment is made that, while no doubt the penalty provision will be used sparingly and with discretion, it should be made clear that it is not to be applied unless the default is wilful or fraudulent in intent.

Reopening an Assessment

A good deal of space is devoted to the discussion of a difficult problem which has repeatedly been before the courts in recent years—that is, the circumstances in which the Revenue authorities should be entitled to reopen an assessment for a past year. On the one hand, it is only fair to the general body of taxpayers that particular individuals should not escape part of their allotted burden through errors ; on the other hand, a taxpayer who has put the full facts before an official should not have hanging over his head for six years the possibility that the same or another official may take a different view of the legal consequence of those facts and claim payment of additional income tax. The Bill appears to strengthen the position of the Revenue, and a good deal is likely to be heard in debate if the clause stands as at present. The report calls attention to the fact that the clause providing the appeal commissioners with their powers of requiring evidence seems capable of wide construction, "wide enough to justify the commissioners in requiring a return giving particulars of all credits and debits to a taxpayer's banking account." Obviously so important a power should be most rigidly defined, and should be restricted to the minimum necessary to protect the scrupulous from the evasive taxpayer.

We heartily endorse the special committee's tribute to the deep knowledge and acumen of the framers of the Bill, but, valuable as their work has been, it was limited to a restatement of existing law ; it was not within their function to suggest substantial changes. The Income-tax Payers' Society intends to proceed further, and its special committee proposes to furnish another report dealing with the amendment of the law. Codification, however desirable, is essentially a matter of form and one for experts ; amendment is a matter of substance, and is of importance to all. We shall await the further report with interest.

THE MIDWIVES ACT AND ITS OPERATION

CONFERENCE IN WESTMINSTER

A conference of representatives of local authorities and others, summoned by the Royal Sanitary Institute, was held at the Central Hall, Westminster, on October 22nd, to consider the Midwives Act and its operation.

Sir Kingsley Wood, Minister of Health, in opening the proceedings, said that it was essential that the new service to be established under the Midwives Act should be in general operation not later than July next. It was not a State service in the sense that it was to be operated from Whitehall, but it was based upon the machinery and work of the municipalities and the great voluntary organizations. Its primary object was to secure the organization throughout the country of a domiciliary service of salaried midwives as an important step in the improvement of the maternity services and in the campaign for reducing maternal mortality. He recognized that the problem of maternal mortality had to be attacked from many angles. The maternal mortality rate in this country was lower than that of any other country except one, but it could be considerably reduced, and he believed that the machinery established under the Midwives Act would do a great deal in that direction.

Provision was made in the Act that every local authority should submit its proposals under the measure to the Ministry of Health not later than January 30th next. He hoped all local authorities would comply with that provision. The Act also required the authorities concerned, before submitting their proposals to the Ministry of Health, to consult the voluntary organizations which employed or were willing to employ salaried midwives in their area and the organizations representing the local doctors and midwives, and also, in the case of county councils, to consult the district councils, which were the maternity and child welfare authorities.

The Status of the Midwife

The Minister went on to say that the provision of a general service of salaried midwives was not intended to convey any reflection on the work of independent midwives, many of whom had to work at present under disheartening conditions and for inadequate pay. He thought it desirable that as many as possible of the independent midwives at present in practice who were suitable in respect of age and efficiency should be absorbed into the new service. There was nothing in the Act to prevent the employment of married midwives, and he was sure that any local authorities which required their female officers to retire on marriage would revise their rule in that connexion so that it should not apply to midwives. His desire was to raise the status of midwives, and he hoped that local authorities would recognize the great importance and responsibity of their work and give them salaries comparable with those paid to other professional women, such as health visitors, in the same area, and that adequate travelling allowances would be paid.

From the point of view of the mother it was important that local authorities, when organizing the new service, should bear in mind the desirability of securing, wherever possible, that the mother had an opportunity of choosing the midwife. In industrial areas that ought not to be difficult. In the more sparsely populated areas midwifery must undoubtedly be combined with some other work, such as general nursing or health visiting, if there was to be a proper and efficient scheme. The greater part of the rural areas in this country was covered by a salaried service of nurse-midwives employed by nursing associations, and he thought that county councils in rural areas should negotiate agreements for the work at present done by voluntary associations, and bring under review the salaries paid, and also ascertain whether the voluntary organizations could extend their work. When they had examined these matters the county councils would be in a position to make their proposals and to come to agreements with the nursing associations for the payment of the requisite annual contributions.

The financial arrangements between the local authority and the voluntary organization must, of course, be fair and proper, but it was important that the voluntary character of the organization and the appeal it could make to the public on that account should not be imperilled by the arrangement. The county councils would have to employ their own salaried midwives for those rural areas which could not be served by the voluntary organizations, in order that there might be a complete service. He had always regarded a partnership between municipalities and voluntary organizations as one of the finest features of the health services of the country.

An Integral Part of the Health Services

Sir Kingsley Wood added that the new midwives service should be organized as an integral part of the health services of the country. In order to secure the best results the co-operation and good will of the midwives in each area was essential, but it was equally important —and this was where the medical officers of health played so important a part—that the salaried midwives should work in close association with the ante-natal services and the health visitors.

He hoped also that the new service would be of assistance to the medical profession, with which it was most desirable to work in full co-operation. The doctors were responsible in those confinements which took place in the home, and would no doubt advise their patients to engage salaried midwives to act as maternity nurses. They would thus have the assistance of a qualified midwife during the confinement and the subsequent fourteen days,

which would relieve them of anxiety and be of much benefit to the patient. He hoped the new measure would furnish another illustration of co-operation and good will between the medical profession, the municipalities, and voluntary organizations.

The basis of an A1 nation was the mothers and children, and, while encouraging the new service, it was important to continue with the present maternity and child welfare services. A very extensive inquiry was being made into the conditions affecting the maternal mortality rate in this country, and he hoped to receive a report on the subject some time during the present year. It would then be necessary to consider what further steps were desirable for attacking this problem. In the meantime the present work for mothers and children should be continued, and the new midwives service should be used to the fullest possible extent.

The Duty of the Local Authority

Dr. John J. Buchan, medical officer of health for Bradford, presented a paper in the course of which he pointed out that the new Midwives Act differed from other Acts in its series in that it made provision not only for the better training of midwives and the regulation of their practice, as did the previous Acts, but also for the employment of midwives by, or on behalf of, local supervising authorities. Those authorities would regard the Act as a means of improving the conditions of maternal and infant health, and in so far as it was an instrument to do that, it would secure their interest and good will. With so many councils, voluntary associations, and other bodies interested in the work, the Act would be a difficult one to administer in many areas, and its success in those districts would depend largely upon the ability of local supervising authorities to make such arrangements as would ensure the harmonious co-operation of maternity and child welfare authorities as well as hospital authorities, and enlist the help of all the bodies interested.

The primary duty imposed upon local supervising authorities was to secure that the number of certified midwives available for attendance on women in their own homes was adequate for the needs of the area. Local authorities, in formulating their proposals, would be wise to base schemes not only upon the services which the midwife had carried out in the past, but also upon the work she ought to undertake to maintain normal conditions in pregnancy, labour, and the lying-in, so as to make motherhood and the early weeks of infant life safer. More work would then be required of the midwife throughout the whole period of her attendance, and she would become an active co-ordinating factor for all the agencies in existence or to be devised in any scheme of maternal welfare.

Number of Midwives in an Area

The estimate of the number of midwives required in an area would depend to some extent on the amount of work an individual midwife was expected to do in a given time. The Ministry suggested that a midwife should usually be capable of attendance on seventy cases as a midwife and thirty cases as a maternity nurse during one year in a populous district. If she gave the proper amount of ante-natal and post-natal attendance, it would mean some 3,000 hours of work, or a sixty-hour working week, which could not be considered as making for the efficiency of the service. It hardly seemed safe to assume that a total of more than eighty cases, including those attended as midwife and those attended as maternity nurse, could be undertaken, and in rural districts the figure would be less, possibly even below fifty a year.

Upon the judicious selection and appointment of suitable persons as midwives the whole success of the scheme would depend. Most authorities would prefer the midwives to have the training of a general nurse, in addition to training and sufficient experience in the practice of midwifery. The supply of such women was quite definitely limited, despite the fact that there were 54,000 midwives on the roll. There was bound to be a transition period before the supply became sufficient for the needs, and even then the supply would not be secured if the conditions of practice were not made such as to attract suitable workers. The general trained midwife, fully qualified and experienced, should have terms of appointment no less advantageous than those of health visitors.

General Discussion

In a brief discussion following Dr. Buchan's paper, Dr. T. N. V. Potts (M.O.H., West Riding) said that the personal interests of the patient should be the primary consideration in formulating proposals under the Midwives Act, and the personal and official considerations which were apt to bias officials and members of councils in preparing such schemes should be subordinated. Lady Williams (honorary secretary, Joint Council of Midwifery) emphasized the importance of co-operation between public health authorities and voluntary associations. It was no longer possible for the full responsibility for providing and maintaining any public health service to rest entirely on voluntary work. Dr. J. Middleton Martin (M.O.H., Gloucestershire) said that the problem was not the mass of work but the distribution of services so that they might be available where they were wanted. He was glad there was to be an opportunity of utilizing existing agencies, particularly the district nursing associations. The nurses of the Queen's Institute, some 4,000 in number, attended about 638,000 confinements last year, and the maternal mortality was only just over 2 per 1,000. It was better to have one nurse going into the house during a confinement than to have a midwife, a district nurse, and a health visitor.

Dr. J. W. Starkey (M.O.H., Colne) said that where local medical practitioners were already co-operating with the local medical officer of health in a comprehensive scheme of ante-natal, intra-natal, and post-natal care it would appear proper to take their opinions on the midwifery service into consideration, with a view to enlisting their loyal co-operation, especially in the matter of eliminating the practice of unqualified persons as maternity nurses. One of the most valuable results of the Act should be the entire elimination of the "handy women" who practised very largely both in industrial and in rural areas. Dr. F. A. Belam (Guildford) thought it a pity that there was no provision in the Act for part-time service by midwives; it definitely limited the free choice of midwives by the mothers. About 50 per cent. of the births in his area took place in institutions, and arrangements would have to be made for domiciliary attendance upon the expectant mothers. Mrs. Brooke (assistant organizer, National Association of County Officers) suggested that the prevailing conditions in midwifery were the cause of trained nurses not taking up the work. If midwives were to be obtained for the new domiciliary service they must be offered a proper wage.

No resolutions, beyond votes of thanks, were put to the conference.

J. A. Ferro y Montoto (*Thèse de Paris*, 1936, No. 251) records three original cases in men aged 20 and 24 and a woman aged 38 of subacute staphylococcal spondylitis leading to an abscess in the cervical, dorsal, and lumbar region respectively for which an operation was required. The symptoms in such cases may be misleading and simulate acute appendicitis, intestinal perforation, or meningitis. Evacuation of an intravertebral abscess by lumbar puncture is deceptive, as it may confirm the diagnosis of meningitis, and is also dangerous owing to the risk of infecting the meninges. The presence of the staphylococcus in the urine is a much more constant occurrence than its presence in the blood, and is doubtless due either to simple passage of the organism from the kidney or to miliary metastatic renal abscesses. It is reasonable to suppose that the condition is best treated by the staphylococcal formol-toxoid (anatoxine of Ramon).

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AMERICAN PUBLIC HEALTH

The constitution of the United States of North America, founded upon the experience of the original thirteen colonies, while intended to provide for a strong central Government was at the same time designed to secure within certain reserved limits the legislative and other independence of the individual States. A natural result of these sovereign powers as enjoyed by the various States has been to create in many cases between State and State differences of legislation, organization, and practice wider than any encountered within the more homogeneous territory of the British Isles. In no department of activity, perhaps, are these discrepancies more apparent than in the public health arrangements of the Union, which exhibit a chequered pattern, altering from place to place and sometimes leaving the observer uncertain whether the variations noted are to be ascribed to actual differences in the health problems existing or to differing points of view of the governing bodies concerned. In cases in which judgement is inevitably difficult guidance towards the right opinion is always welcome. Appropriate guidance in this instance for all who desire it is supplied in ample measure by the interesting survey of the American public health system which Professor R. M. F. Picken completes in this issue of the *Journal*.

The key position of the general practitioner in the matter of prevention is recognized in the United States as it is here. He is, however, more effectively used, despite the existence of some division of policy between the public health service and the profession in general. The local public health services are manned for the most part by medical men, though few of those holding office in counties or cities have had special training or possess a qualification in public health. The range of infectious disease control is widely extended in the Union. Miami, owing to the development of air transport, requires protection from yellow fever, and San Francisco from the enzootic plague which surrounds it in California. A fresh expansion of malaria may threaten from the new reservoirs of the Tennessee Valley scheme. Tularaemia, choriomeningitic encephalitis, staphylococcus food poisoning, and sundry chlamydozoal infections are new, or variants of old, diseases which invite vigilance. Immunization against diphtheria has been applied on the most ample scale with results for which a great measure of success may be justly claimed. Professor Picken expresses a guarded view on the alleged dominant role of the pasteurization of milk in the decline of tuberculosis in America. With regard to venereal disease, he says that despite various restrictive measures the recorded figures fail to reveal any abatement of prevalence. The proportion of births attended by midwives is low by comparison with this country. In New York State it is 1.7 per cent. for white women. Local authorities named in the survey are pertinacious in the pursuit of expectant and nursing mothers by means of monthly letters. Over all, the rate of maternal mortality in the United States is, as here, refractory.

In American hospital construction the tendency now is to move away from the large ward system. The smaller hospitals vary greatly in their architectural design. Large hospitals in the great cities are built high to reduce site area. Grouped hospitals are favoured by some, and most voluntary hospitals charge their patients as a matter of course for the maintenance and treatment given. At the present time contributory schemes for the provision of treatment in hospital for persons of moderate means are being promoted. One consequence of the financial crisis of 1929 was to throw into high relief many social disabilities in America which under conditions of prosperity had remained latent. To ameliorate these the Social Security Act of 1935 made provision for the issue of Federal grants to States towards child welfare and other services, including old age and widows' pensions and contributory unemployment insurance. In the distribution of the funds account has to be taken of population, special health problems, and financial need. The Act devotes sums also to research and the training of medical and lay public health personnel. The scope of existing courses in America for prospective public health medical officers shows considerable variation. Some medical schools give short courses lasting a few months. At others, comprising the Johns Hopkins school and Harvard and Yale Universities, the curriculum may cover from one to two years. In some places a part of the course is directed to specialized study. At Vanderbilt and Yale the preventive idea is fostered in the minds of students of medicine by means of clinical case studies in which the student rounds off his clinical report with a first-hand investigation of the economic, social, and other circumstances of the patient concerned.

In the provision of a public health service for such an immense area as the U.S.A. there must inevitably be gaps and imperfections of which those on the spot will be well aware. The paucity of public health qualifications among American medical officers, for example, is a developmental imperfection destined soon to be corrected as the services expand. The failure of restrictive measures to reduce the prevalence of venereal disease will confirm the view of many British administrators that the ethical and educational approach is the only way. The British observer is not favourably

impressed by the persistent monthly letters to expectant mothers. This work needs a light hand. As regards the combining together of persons of moderate means in the States to secure hospital accommodation, we may note that such combinations are only now beginning to develop on a large scale here. Labour and employers of labour are well schooled in organization for their respective objects, but persons of moderate means in England do not combine with alacrity, and have been disposed to rely for their sick-bed accommodation upon the service of a nursing home or the chance of a pay-bed, if any, in a general hospital. It is of interest that the Social Security Act proposes to allocate the Federal grants on a basis akin to the weighted population of English local government. It is of interest, too, that the same Act, though widely ranging, does not, in the meantime at least, take in health insurance. Of the educational value of the public health courses at the great American universities there can be no question, but it is not clear that their vocational value is equally high. It is perhaps too much to expect a uniform curriculum for medical officers in the States so long as the duties which they may be called upon to discharge remain unstandardized. In any event we are inclined to doubt whether specialist work pursued within a short course, which is itself a specialism, can be productive of the best. The clinical case studies as organized at Vanderbilt and Yale are along lines that tend to a more real appreciation of the state of the public health and so to a more effective way of maintaining it at a high level. The development here of such studies on the Vanderbilt and Yale model would do much to fulfil the ideal—in praise of which many voices are heard—of preventive medicine.

HEALTH MATTERS IN PARLIAMENT

The parliamentary session of 1935–6, which has just ended by prorogation, was the first in which the House of Commons recognized national health as a major political issue. The note was given when, during the debate on the King's Speech, Sir Francis Fremantle advocated general provision of physical training, but the initiative in later debates on health and nutrition was taken by non-medical members. A wish to attract electoral support by such discussions or to embarrass the other side could be detected as a subsidiary motive, but even so this implies the discovery that the nation had become "health conscious." The Opposition had its own reasons for concentrating on nutrition. "Good food for everyone" would have a better human appeal as a programme than "Nationalization of the means of production, distribution, and exchange." Nevertheless the major reason for the new concern about health and nutrition was no desire for party advantage, but agreement that Parliament, by legislation, by stimulating the local authorities, and by arousing and directing public opinion, could make the people of the United Kingdom healthier, happier, and more efficient. As Dr. Elliot told the House, a greater proportion of this nation is well nourished than is the case with any other nation, and that proportion has risen during recent years. Further improvement was seen to be possible and was desired by all. Sir Kingsley Wood promised to close one gap in the provision for safeguarding health—the gap between the departure of children from school and their entry into national health insurance. That will be a task for Parliament in the session now about to begin. Sir Kingsley Wood was also able to bring evidence against the suggestion that transfer of low-paid workers from the slums to new housing estates had induced more ill-health. This helped the House of Commons to approve heartily the progress of the slum clearance and re-housing programme and of the overcrowding survey.

Housing, however, did not monopolize the Ministry of Health debates, and detailed examination of the public assistance scales no longer arose on the Estimate. With these issues transferred or subordinated, and with the House "health conscious," the Ministry of Health Vote, for the first time in the life of the Department, was used for a debate on disease and its prevention, and on good health and its promotion. Other special discussions were about silicosis, nystagmus, the psychological treatment of delinquents, the relation of alcohol to road accidents (about which Dr. Salter spoke strongly), and the effect of homework on children's health (on which subject Sir Ernest Graham-Little was heard with appreciation). Dr. Howitt, as a member of a former Departmental Committee on the subject, spoke about the double-shift system when applied to women and young workers. The statutory report on unemployment assistance also became, when debated by the Commons, a peg for discussion of nutrition and health, while the House of Lords took a more general survey of nutrition, during which Lord Astor, Lord Luke, and the Bishop of Winchester brought together much material for consideration by the Government.

The chief medical legislation of the session was the Midwives Act, a Government measure establishing in England and Wales a salaried service of midwives under local authorities, either directly or through voluntary organizations. An equivalent Bill for Scotland was tabled and should pass during the coming session. The Midwives Act accords with the desire of the House for action to reduce maternal mortality, but the Labour Opposition objected to the permission to delegate this work to voluntary organizations. The Minister of Health would not promise further legislation to establish a national maternity service, although the report by the British Medical Association was before him. He extended the period which the Midwives Bill originally set to the subsidized attendance of a midwife on a mother after childbirth. Another statute continued the temporary arrangements for the distribution of milk, and the price of milk supplied to hospitals was questioned during the discussions. The Education Act prolongs, after a stated date, the period of elementary

education in England and Wales to fifteen years, but exemptions will be allowed for the purpose of entering beneficial employment. The Hours of Employment Conventions Act and the Women and Young Persons Act altered conditions of employment in factories, and a more general Factories Bill was promised for the coming session. The statutes governing national health insurance were consolidated into one Act, and large sections of the public health law were consolidated into the Public Health Act and into a second Act specifically for London. Lord Luke's Voluntary Hospitals (Paying Patients) Act was carefully examined in both Houses and approved, despite signs of a lingering prejudice in some quarters against the voluntary system. It enables the Charity Commissioners to make orders authorizing admission of paying patients by voluntary hospitals which have no power to do this now. Less fortunate was the Medicines and Surgical Appliances (Advertisement) Bill. Introduced by Mr. Arthur Duckworth, who had a good place in the private members' ballot, it was given a Friday for the second reading debate, but was "counted out," forty members not being at hand to support it when the challenge was made. Most lay members preferred to be absent rather than commit themselves on a subject about which last-minute protests had poured in from organized bodies. Reference was made during the discussion to the apprehensions which the Bill caused to "the herbalists, a large and important body." There was also some hint of an inclination among lay legislators to suspect or pretend to suspect that medical men had planned to put out of business rivals who might cure their patients. It should be recorded, therefore, that Sir Arnold Wilson, who opposed the Bill, advocated broadcasts to the nation on the theme "Go to your doctor early." Sir Arnold said that the consumption of drugs in the United Kingdom was fourfold what it had been in 1913, and that, allowing for the difference in taxation, more was now spent on drugs than on alcohol. Sir Kingsley Wood, in another debate, said on this that the British were becoming a nation of medicine drinkers.

The new Poisons List and Rules were laid on the table and approved without debate. There was more concern about the Government preparations to organize defence against hostile use of poison gas against civilians. The report of the Departmental Committee on Coroners, making a recommendation which would prejudice medical men for the position of coroner, was also laid on the table, but not discussed; we referred to this matter last week at page 819, and the British Medical Association has raised it with the London County Council. During the latter part of the session two or three Labour members made charges against medical referees. Questions about vaccination were few. The Parliamentary Medical Committee had on several occasions to keep a close watch on proposals affecting medical practice—for example, when it found that the Shops (Sunday Trading) Bill would restrict the compounding of urgent prescriptions by chemists on Sunday.

MONEY VALUE OF INDUSTRIAL MEDICAL SERVICES

A recent issue of the weekly public health reports of the United States Public Health Services contains an article by Dr. D. K. Brundage entitled "An Estimate of the Monetary Value to Industry of Plant Medical and Safety Services." Dr. Brundage first quotes Mr. E. A. Filene on the point of view of the employer. "If an organization does more than it can afford to do for its employees, some other organization, which does less, will undersell it, and presently there will be no business and no resources with which to do anything." Nevertheless, business has discovered that a reasonable expenditure on safety and medical services is a paying proposition, and this discovery, rather than humanitarian agitation, is, at any rate in America, chiefly responsible for the most notable advances in the health and safety movement. During the period from 1907 to 1932 statistics show a steady decrease in the frequency of occupational accidents in the iron and steel industry of the U.S.A. For the period 1907–11 the average rate of accidents per million hours' exposure was 69.2; for 1928–32 it was 21.1, a decrease of 70 per cent. During the same time the accident severity rate, gauged by time loss, was also diminished by over 50 per cent. That there is scope for further reduction is evidenced by the fact that in 1932, while the rate for the whole industry was 18.1, it was only 8.1 in a group of companies which had made special efforts to reduce occupational injuries.

How much can an employer afford to spend on intensification of safety work? This depends on the number of accidents which would be prevented by an enlarged safety programme. The inference is drawn that an efficient safety organization can effect a reduction in the accident rate of 10 to 15 per cent. within a two- or three-year period. In a study of compensatable accidents it has been estimated that the indirect or hidden cost of industrial injuries is, on the average, four times as great as the cost of compensation and medical services. It is calculated that the annual number of such injuries in the U.S.A. exceeds two millions, and the consequent cost is more than two and a half billion dollars per annum. The record of time lost through sickness and non-industrial injuries does not show decreases of corresponding magnitude, and in this field Dr. Brundage sees wide scope for competent industrial medicine. A trained and experienced personnel is essential. The employee is encouraged to consult a doctor early, and illnesses which would otherwise have run a long course may thus be shortened, or even cured at the outset. The following indirect items in the bill show the snowball effect of industrial illness. Time is lost by other employees who stop work to help or care for disabled fellows, and by foremen who must find and train substitutes. Money is lost through interference with production, failure to fulfil orders in time, payment of forfeits, and the wages of the incapacitated employee. Unfortunately the number of firms employing either

a whole-time or part-time safety director is comparatively small, amounting to only 5 per cent. of 615 plants surveyed by Dr. Brundage. The extent to which the costs of industrial accidents and sickness add to the price of products, or, in other words, decrease the purchasing power of the dollar, is not generally realized. A reduction of 20 per cent. in accidents and sickness, if maintained, would effect a saving which in seventeen years would pay off the whole of the American national debt, of approximately 34,000,000,000 dollars.

HARVEY CUSHING'S JOURNAL

Dr. Harvey Cushing's many friends in this country will warmly welcome his *Surgeon's Journal*,[1] embodying his experience in the great war. It was written at the time largely on the backs of old temperature charts, sometimes in shelters by the light of a guttering candle, sometimes in a shaky ambulance. The result is somewhat kaleidoscopic—cranial operations for eighteen hours at a stretch, bombs, drenching rains, mud, duckboards, more bombs, more operations, Véry lights, wild flowers and birds, tedious journeys in the cold and wet, medical conferences on antiseptics and surgical methods, hunts for fossil echinoderms, the dog who had three wound stripes on his collar and went barking over the top with his master, the smashing of the central French depot of *x*-ray apparatus by yet more bombs—the narrative rattles on in a manner that at times almost recalls the utterances of the late Mr. Alfred Jingle and leaves the reader rather breathless but always interested. Familiar figures of the recent past flit across the stage—Osler, Rose Bradford, Makins, Herringham (enthusiastically burying himself in Thiers' history in his spare moments), Bowlby (" during war time only optimists like Bowlby should have the privilege of speech "), together with many others happily still with us. Amid it all we visualize the neat figure of the author, alert, enthusiastic and humorous, unsparing of himself and of his surgical skill. In the trenches he comments: " strange warfare, fit only for weasels, moles, and rats." He shows the striking benefit conferred by antityphoid inoculation by the figures for the French Army in 1915.

> " At one time there had been 9,000 cases in the 2nd Army alone, and some 70,000 in all the armies with about the usual 13 per cent. mortality . . . but since vaccination of the troops had become compulsory their number was rapidly diminishing. It might otherwise have been disastrous. Meanwhile, the British Army had been almost entirely exempt—only an occasional case among those unvaccinated."

He was not favourably impressed with the French methods of wound dressing, but charitably remarks: " The time will come when they will learn better methods." He saw the old cathedral bell at Ypres engraved with a representation of the Dance of Death, which, after all these years, had tumbled down into a dance of death more horrible than any it had previously seen. The grimness of his record is lightened, however, by amusing stories such as that of the Scot who saw on a signboard, " Gott strafe England," and scratched out the last word and substituted " Britain." At one time our author was taken from his operating work and kept waiting about for a fortnight in Paris while the authorities considered whether they would send him home for uttering some disparaging criticisms in a letter. Fortunately for the wounded it was decided to overlook this heinous offence. On another occasion, while the great German push of March, 1918, was in progress, he was taken away by the American authorities to deliver a single lecture in the Army School at Langres, thereby losing a whole week's operations at a critical juncture. His protests were admitted to be just, but he was told, " It's a way we have in the Army." Christmas packages from home addressed via A.E.F. in Paris reached them some time next May. But there were more serious lapses. Indeed, some of his descriptions lend colour to Mr. Lloyd George's description of the American Army's methods as " bustling incompetence." Harvey Cushing's journal is welcome relief from the tomes written, by politicians and soldiers alike, to show that the author was always right and everybody else generally wrong. It is characteristic of the man ; and that is high praise.

[1] *From a Surgeon's Journal, 1915–1918*. By Harvey Cushing. London: Constable and Co. Ltd. (18s. net.)

INTRAVENOUS GLUCOSE IN CHRONIC NEPHRITIS

Intravenous glucose has been given as a remedy for many years and for a variety of diseases. Its use in nephritis in this country is usually restricted to one or two haphazard injections in advanced cases of uraemia. A recent article from Geneva[1] describes the results of treatment in a carefully controlled series of cases of chronic nephritis with hypertension. The authors use a 20 per cent. solution of glucose and give 400 c.cm. daily by the continuous drip method at a temperature of 37° C. ; fifty to eighty minutes are taken for each injection, which is repeated daily for a fortnight. Febrile reactions are avoided by careful sterilization and the use of very pure glucose, but the injections are often followed by slight hypoglycaemic symptoms such as sweating, palpitation, and hunger. Occasionally there is temporary dyspnoea, which ceases if the injection is stopped or slowed down. In thirty-four cases of chronic nephritis with azotaemia and hypertension good results were claimed in twenty and moderate improvement in six. The effects, of course, tend to be temporary and are chiefly subjective. The appetite returns, drowsiness and fatigue disappear, sleep becomes normal, and headache and even dyspnoea are improved. The course of injections may be repeated a few weeks later if the symptoms reappear. In spite of pronounced clinical improvement there may be little or no change in the chemical state of the blood and urine as estimated by the usual tests, but the blood pressure tends to fall even though not previously diminished by rest in bed and dietetic treatment. The effect on the heart and circulation is in fact particularly good. The authors ascribe the beneficial influence of intravenous glucose to several causes. First of all, it has a nutritive effect and there is often a gain in weight during the treatment. This may, however, be partly due to retention of water, as no striking diuresis is usually recorded. Secondly, glucose may assist the antitoxic power of the liver and may combine directly with toxic products such as phenols, cresols, and aromatic and amino-acids, which Becher has shown to be present in the blood in uraemia. The hypertonic

[1] Roch, M., Martin, E., and Sciclounoff, F.: *Ann. de Med.*, 1936, xxxix, 286.

glucose may also have an antispasmodic effect on the vessels and a favourable action on the heart muscle. Finally, some of the results may be due to stimulation of the internal secretion of the pancreas, as shown by the hypoglycaemia which follows the initial rise in blood sugar.

PROBLEMS OF FOOD STORAGE

The report of the Food Investigation Board for the year 1935,[1] which extends to more than two hundred pages, records the proceedings of the Board since it was reconstituted in the autumn of 1934. During the preceding seventeen years the most pressing problems of food storage had been solved by the introduction of brine-freezing of fish and gas storage for fruit and chilled meat. Concurrently a mass of scientific knowledge had been accumulated which the Board had found it necessary to sift and examine in order to determine the line of future research. Although individual animal products present different problems of handling and storing, the constituents of animal tissue are factors common to all, and it was decided that the investigation of such constituents as proteins, fats, pigments, and micro-organisms held out the most promise. Along these lines research has been conducted on the properties of the protein myosin, which influences the changes occurring during rigor mortis in meat and fish. This substance also exercises a control over the subsequent changes in structure during storage. To provide a closer liaison between the scientific workers and the meat industry a laboratory has been established near Smithfield market. It is also hoped that officials of Dominion Governments will make use of the facilities available. Interesting information has been gleaned about the pig. It appears that if a pig's muscles are overheated before slaughter, which may easily occur in transit from farm to bacon factory, a higher electric resistance is produced. This condition is inimical to the satisfactory penetration of salt in the process of drysalting. Pigs killed under suitable conditions on the farm show a lower electrical resistance in the muscle. A different problem is presented by fruit and vegetables, whose material is living instead of dead. Therefore, in order to preserve stored fruit from deterioration, a study of the physico-chemical mechanism of living processes is necessary. This is a matter of difficulty with oranges and bananas—which form a large proportion of the fruit consumed in the United Kingdom, because both are grown abroad. Useful research on the banana is being carried out at the Low Temperature Station in Trinidad. Green bananas can be ripened by means of the gas ethylene, which is naturally evolved by ripe apples and bananas, or may be artificially added to the air. The fact that rooms heated by coal-gas burners have long been found satisfactory for ripening bananas is probably due to slight leakages in the gas supply providing the necessary ethylene. In fruit storage, experiments with "Conference" pears have given highly promising results. By means of a gas-storage apparatus, in which the concentrations of oxygen and carbon dioxide are independently controlled at levels as low as 5 per cent., the pears have retained their flavour, texture, and appearance unimpaired for more than six months. Storage of tomatoes presents a problem still to be solved, and studies of the physiology of this fruit are in progress. The unsatisfactory condition in which soft fruits, such as strawberries and raspberries, usually reach the consumer is due to the inability of the industry to make use of the available knowledge on the ground of expense. Provided that the fruit is sound, immediate cooling to a temperature of 40° F. and the avoidance of condensation of water are the essential requirements. The consumer would also welcome a satisfactory method for the storage of new potatoes. The report also contains information regarding experiments on the storage of eggs, the smoking and storage of herrings, the atmospheric oxidation of fats, and the effects of radiation on bacteria. The scope of the Board's work increases year by year, and it has been necessary to extend the laboratories at Cambridge in order to provide further accommodation at the Low Temperature Research Station.

[1] London: H.M. Stationery Office. 1936. (3s. 6d. net.)

ORIGIN AND MEANING OF ANATOMICAL TERMS

It is startling to find that the medical men of a nation which conducted its examinations in Latin until quite recently now require a guide to the anatomical and physiological terms in common use. The late Professor Tiepel, then of Breslau, issued in 1905 *Die Anatomischen Namen: ihre Ableitung und Aussprache*. His plan was to give in alphabetical order the words used in anatomy and physiology, indicating the quantity of each syllable to ensure correct pronunciation. He showed from what constituents each term was derived and gave the German equivalent. He also added a Greek alphabet and explained the use of the breathings for those who were entirely ignorant of the language. The little work was found to be useful, and it now appears in an eighteenth edition dated 1936 under the editorship of Professor Stieve.[1] Such a work at present is superfluous for the well-grounded English medical student because the whole jargon of medicine is built up of words derived from the Latin and Greek which he learnt at school. But even for him a time has come when Greek does not necessarily form a part of his education, and it may be that Latin will soon be to him as unknown as the French of Paris was to Chaucer's Lady. An appendix tells of some of those who have given their names to various anatomical structures. It may be noted for the nineteenth edition that the work of Sir William Bowman in connexion with the kidney should be recognized, that Sir Charles Bell and Henry Head should not be omitted, that the names of Arthur Keith and Francis Sibson should be spelt correctly, and that Munro secundus (1773–1817) should be given his due.

On November 16th the Army Medical Library in Washington celebrates its centenary, and the Oration will be delivered by Sir Humphry Rolleston. It is interesting to recall that fifty years ago Dr. John Shaw Billings, spoken of as "the Father of the Surgeon-General's Library," gave the address in medicine at the Annual Meeting of the British Medical Association at Brighton on "Medicine in the United States, and its Relations to Co-operative Investigation."

[1] *Die Anatomischen Namen: ihre Ableitung und Aussprache.* Eighteenth edition. Munich: J. F. Bergmann. (R.M. 3.90.)

THE ENDOCRINES IN THEORY AND PRACTICE

This article is one of a series on Endocrinology contributed by invitation

THE RELATION OF THE HYPOTHALAMUS TO THE PITUITARY GLAND

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The apparent relation of the hypothalamus to the posterior lobe of the pituitary gland was first suggested from the observations that the condition of diabetes insipidus could be successfully treated by injections of pituitary extract. Clinically, various disturbances in fat and carbohydrate metabolism, body-heat regulation, and dysfunction of the sex glands, as well as diabetes insipidus, have been described as originating from hypothalamic damage. Considerable confusion, however, has been caused in trying to assess whether such changes are due primarily to brain damage or to associated lesions of the pituitary gland, since the pathological process is seldom one confined to a localized area. Experimental conditions have made it possible to produce controlled areas of damage and reproduce most of the changes found clinically.

Anatomical and Functional Relations

The intimate connexion of the posterior lobe of the pituitary gland with the tuber cinereum by the infundibulum and pituitary stalk is well known. The tuber cinereum, forming part of the floor of the third ventricle, extends from the optic commissure in front to the mammillary bodies behind. Laterally it is continuous with the anterior perforated substance, the sublenticular region, and the ventral surface of the anterior part of the thalamus.

Cloake[1] describes the following groups of large cells found in this region.

1. The ventral nucleus of the tuber, near its ventral surface, continuous behind with the large cells of the corpus mammillare.
2. The paraventricular nuclei arranged around the anterior pillars of the fornix close to the lateral wall of the third ventricle on each side.
3. The nuclei of the optic tracts on each side, subdivided by Spiegel and Zweig into the supra-chiasmatic nucleus and the supra-optic nucleus.
4. The accessory supra-optic nuclei, one on each side.

A well-defined bundle of fibres found in the pituitary stalk is said to come chiefly from the nucleus supra-opticus, and runs to the posterior lobe of the pituitary gland. A detailed description of the anatomy and neural connexions of this region is given by Beattie.[2]

The close anatomical relation between the nuclei of the tuber region and the pituitary gland has led to the suggestion that a secretion from the posterior lobe is intimately associated with hypothalamic function. Cushing[3] suggests that a normal sequel of changes occurs as follows: viable cells, as first described by Herring, pass from the intermediate lobe of the pituitary into the posterior lobe ; here they become transformed into hyaline bodies which stream upwards towards the ventricle between what appear to be loosely textured, long-drawn-out tails of ependymal glia. In support of such a theory is the evidence that experimental obstruction of the hypophyseal stalk leads to a damming back of the secretory product and large masses of hyaline are found in the gland. Whether such a secretion acts directly on nerve centres of the tuber or first passes into the cerebro-spinal fluid is a matter of some controversy. Recently Gersh and Tarr[4] have suggested from histological studies that the so-called hyaline bodies of Herring are artefacts and do not represent a secretory product. Frank[5] and others have shown that the pars tuberalis, which does not contain extractable posterior lobe hormones, may, following hypophysectomy, take on the function of secreting these hormones. These observations suggest that an exceedingly close relation must be present in the formation and action of the secretory products.

Diabetes Insipidus

The frequency with which diabetes insipidus has been found clinically in association with lesions in the hypothalamic region leaves no doubt about the general nature of its aetiology. The intensive polyuria frequently associated with tumours of the pituitary region, or following operative intervention in this area, has been described by Cushing and many others. A similar condition due to involvement of the hypothalamic region in chronic epidemic encephalitis or to basal meningitis of various types has often been recorded. Attempts to determine the exact location of the lesion giving rise to the urinary symptoms are obviously difficult because of the general nature of the pathological process. Cushing describes twenty-two cases of chiasmal gliomas of which nine had definite polyuria. Such tumours tend to invade and destroy the region of the supra-optic nuclei rather than the pituitary gland. Eaves and Croll[6] have found after careful histological studies that in chronic epidemic encephalitis there are often changes in the pituitary gland. They have also shown that severe lesions in the hypothalamic region, associated with this disease, do not give rise to diabetes insipidus but that less intense lesions may do so.

Experimental diabetes insipidus has been successfully induced by a number of operative procedures. It is extremely difficult, however, at the present time to determine exactly what relation the pituitary may bear to this condition. Only a brief outline of this work can be given, but articles by Staemmler[7] and by Ranson[8] review this subject in detail. Much evidence can be found to show that persistent polyuria may be brought about by lesions in the supra-optic nuclei or in the pituitary stalk. In a series of cats Fisher, Ingram, and Ranson[8] have produced diabetes insipidus by bilateral injury to the supra-optico-hypophyseal system. This resulted in marked atrophy of the supra-optic nuclei and posterior lobe of the pituitary. Unilateral damage to the system did not give rise to polyuria, and large lesions in other parts of the hypothalamus had no effect. This has been confirmed by them[9] in monkeys. A transitory polyuria which starts immediately after the operation has been described. This is not present in all animals which develop the permanent condition, and has been ascribed to an irritation of the anterior pituitary. In support of this is the finding that anterior transplants may lead to a marked diuresis which ceases on their removal,[10] and that extracts of this lobe may on injection cause a great increase in urine secretion.[11 12 13]

It is generally agreed that complete removal of the pituitary gland is not succeeded by permanent polyuria; a transitory effect, however, may often occur. Camus and Roussy[14] believe that any effect following hypophysectomy is due to an associated damage to the pituitary stalk. Richter[15] has found that permanent diabetes insipidus can be produced in rats by removal of the posterior lobe alone, the degree of permanency of this condition apparently being related to the amount of anterior lobe remaining.

From the experimental evidence it is impossible to form any definite theory of the production of polyuria. It would at first appear that any interference with the posterior pituitary-hypothalamic connexion might alter the secretion of an anti-diuretic pituitary hormone. The finding, however, that transient polyuria may be brought about by hypothalamic puncture in an animal after previous hypophysectomy,[16 17 18] and that pituitary removal itself does not permanently affect the animal, indicates that it is not yet possible to give a complete explanation of this problem.

The anti-diuretic action of pituitary extracts is stated to be directly on the kidney,[19] but the mechanism of the diuretic action of hypothalamic damage is not clear. Cross-circulation experiments have been described which demonstrated a polyuria-producing substance transmissible through the blood stream. This substance was supposedly produced after hypophysectomy.[20 21] There is considerable evidence to show that denervation of the kidney does not alter the polyuria following tuber injury.[22 23] Transection of the brain stem or spinal cord and double vagotomy have also been found to have no effect on the production of diabetes insipidus.[24] At the present time it may be stated that an interference with the supra-optic nuclei of the hypothalamus, the posterior lobe of the pituitary, or their connexions may result in permanent polyuria. Evidence would appear to favour a hormonal alteration of some kind affecting the kidney and leading to the condition of diabetes insipidus.

Glycosuria, Adiposity, and Genital Atrophy

Descriptions of cases with glycosuria, adiposity, and genital atrophy attributed to hypothalamic damage are numerous. Whether such findings are due to an associated pituitary dysfunction or primarily to the brain lesion is exceedingly difficult to prove. Experiments to induce such changes by hypothalamic damage in the absence of the pituitary gland are not easy to interpret because of the effects on carbohydrate and fat metabolism and on the reproductive system caused by hypophysectomy itself. Smith,[25] however, states that with both a pituitary and a tuber injury in a young animal the adiposo-genital syndrome of Fröhlich may develop. Transient glycosuria may occur in a normal animal after a variety of nervous lesions. Tuber lesions in dogs[26] and in rats[14] may cause glycosuria, probably without altered pituitary secretion. No antagonistic action as in diabetes insipidus can be postulated, however, as both anterior and posterior lobe extracts are known to cause hyperglycaemia. The demonstration that degeneration of the paraventricular nucleus follows diabetic puncture in the floor of the fourth ventricle has led to the suggestion that the nucleus may be a regulator of sugar metabolism by maintaining sympathetic and parasympathetic centres in equilibrium.[1] It has also been stated that there are changes in the paraventricular nucleus after experimental pancreatectomy.[27] That such a mechanism could be influenced by the pituitary gland is possible, but there is little direct evidence to suggest such an action. Cushing, after studying the effects of pituitrin injected into the ventricles of the brain, has suggested that this substance may have a normal stimulating effect on the brain of a parasympathetic type. Controlled experiments with purer pituitary preparations, however, give a less effective response, so that the effect must be considered at the present time of questionable specificity.

That marked adiposity may occur in patients with tumours of the tuber region is well established. Cushing finds that tumours which involve the tuber are more frequently associated with adiposity than are intrasellar lesions. Adiposity is a feature of basophil adenomas of the anterior lobe of the pituitary. From the experimental studies of Bailey and Bremer, Roussy and Smith, it has been shown that tuber damage without pituitary injury may frequently lead to adiposity. Gournay and Le Grand found the paraventricular nucleus always injured in dogs which developed obesity after tuberal puncture.[28] The effect of giving pituitary extract to these obese animals does not appear to have been studied, but Cushing states that adiposity may develop as a result of blockage to pituitary secretion by tuber clips.

Atrophy of the sex organs after hypothalamic injury is difficult to interpret in view of the similar effects produced by removal of the anterior lobe of the pituitary. Experimentally, atrophy of the gonads would appear to have occurred without evidence of damage to the pituitary gland.[25 26] It has been suggested that a possible interference with the blood supply of the gland may have caused these changes. The fact, however, that there were no histological changes in the pituitary, thyroid, or adrenals and that genital atrophy does not arise until a large amount of pituitary tissue is destroyed would suggest that hypothalamic damage may alter the normal mechanism of gonad function. It is of interest to note in this connexion that ovulation may be induced in the rabbit by electrical stimulation of the brain or spinal cord. The impulses pass by some route to stimulate the secretion of the anterior lobe of the pituitary gland which acts on the ovary.[29] Other changes, such as loss of temperature regulation and pathological sleep, have been observed in association with brain tumours involving hypothalamic centres. Similar conditions have been found to accompany experimental lesions or hypophysectomy. The relationship of the pituitary, however, has not been investigated in enough detail to conclude what influence it may have over such changes.

Stomach Lesions

Gastric hypermotility and hypersecretion have been shown by Beattie[30] and others to follow direct stimulation of tuberal centres. In some animals peptic ulcers, which may perforate, develop. Such an effect does not arise after section of the vagus nerves, and appears to be due to a stimulation of the parasympathetic nervous system. That the pituitary gland may be closely associated with gastric function has been suggested by the finding of gastric ulcers in cases of pituitary tumours[31 32 33]; also, D'Amour[34] has shown that haemorrhagic erosions may occur in the stomach mucosa after hypophysectomy in animals. The demonstration by the authors[35 36] that extracts of the posterior lobe of the pituitary bring about a severe alteration in the secretion of the stomach and also induce typical chronic ulcers would suggest that a normal pituitary-hypothalamic control may be present.

Summary

A series of disturbances found in clinical cases of lesions in the hypothalamic region have been reproduced in experimental studies. The part which the pituitary gland may play in such changes is still obscure; but the close anatomical relationship and the effects of the

injection or removal of pituitary hormones suggest the probability of some normal functional relationship between this gland and the hypothalamus.

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THE NATION'S HEALTH SERVICES

ANNUAL REPORT OF THE MINISTRY

The activities of the Ministry of Health as described in its annual report suggest the concerns of a busy and efficient mother in a large household, ever looking to the cleansing of her dwelling, the replenishment of her cupboards, the assortment of her laundry, and at the same time diligently scrutinizing her domestic budget. An extraordinary range of public affairs is covered, including a great deal—such as local finances, county boundaries, and borough charters—which has no direct health interest. The large health questions are institutional provision for the sick, domiciliary medical relief, maternity and child welfare, accommodation for infectious diseases, seaport (and now also airport) sanitary administration, lunacy and mental deficiency, adulteration of foods, water supply, sewage disposal, public cleansing and recreation, and beyond these the great fields of national health insurance service and public assistance, housing, and town and country planning.

Provision for the Sick

The report for 1935–6[1] is largely statistical, almost wholly so in its forty-four appendices, which, if one can read figures with imagination, are the most interesting part of the document. From one of these it can be discovered that the total number of institutions or hospitals under the Poor Law Act in England (Wales is dealt with as a separate section) is now 448, with 71,856 beds, and of general hospitals under the Local Government or Public Health Acts ninety-three, with 50,508 beds. The total number of beds occupied in all these institutions at the end of last year was 101,482, and during the year there were 678,455 admissions, and nearly one million and a half out-patient attendances. All these figures are growing except those of Poor Law institutions. Reference is made in the body of the report to the importance of co-operation between voluntary hospitals and local authorities in the provision and utilization of accommodation for the sick, and also of co-operation between local authorities themselves in the use of institutions transferred to them under the Local Government Act.

For domiciliary medical relief the system under operation over the greater part of the country is the appointment as district medical officers of practitioners in private practice. Certain authorities have recently adopted experimentally over the whole or part of their areas a system whereby domiciliary relief is provided by a panel of practitioners. Up to April last such arrangements had been made in parts of seven counties and in the whole or parts of six county boroughs.

[1] Seventeenth Annual Report of the Ministry of Health. H.M. Stationery Office. Cmd. 5287. (5s. net.)

Maternity Care

Further regiments of impressive figures march into view when the report comes to deal with maternity and child welfare services. The number of ante-natal clinics increased from 1,396 at the end of 1934 to 1,491 at the end of 1935. Infant welfare centres, which are almost twice as numerous as ante-natal clinics, show a similar increase. Here again an appendix affords useful information. The total number who attended ante-natal clinics in the year (including clinics provided both by local authorities and by voluntary associations) was 273,423—a figure equal to nearly half the total notified births. The average number of attendances per woman at these ante-natal clinics was four.

Some idea of institutional maternity in so far as it takes place under the provision made by local authorities is afforded. There are ninety institutions in England, with 1,558 beds, provided by local authorities wholly for maternity patients, and there are 4,223 further maternity beds in the wards of 363 other institutions transferred under the Local Government Act. The institutions belonging to voluntary associations and providing accommodation subsidized by local authorities numbered 131, with 2,133 beds. Altogether the number of women who had what might be called a "council confinement" during the year was 147,288, and the demand for maternity beds shows a steady increase.

The maternal mortality figure for England and Wales in 1935 was only 3.93 per 1,000 live and still births (1.61 for deaths from puerperal sepsis and 2.32 for deaths from other causes), a reduction of 0.48 on the 1934 figure, and the lowest rate since 1925. The marked reduction is in deaths from puerperal sepsis. Although the number of live births was slightly higher in 1935 than in the previous year, the number of maternal deaths was nearly 300 fewer. The report states:

> "Experience has shown that, where domiciliary midwifery services are provided on a properly organized basis by the salaried midwives of voluntary hospitals and nursing associations, the maternal mortality rate is well below the national rate, and it is considered that the organization of a service of salaried midwives in all areas should do much to secure a reduction of that rate. The Bill [now the Midwives Act, 1936] is also intended to raise the status of the midwives' profession by providing adequate salaries and secure prospects for midwives entering the new service."

The number of candidates who received the certificate of the Central Midwives Board during the last recorded year was 2,936, a slight reduction on the previous year's

figure. Midwives who gave notice of their intention to practise numbered 18,478 in England and Wales, but as many of these practise (and accordingly notify) in more than one area the actual number is rather smaller.

Infant Welfare: Tuberculosis

Infant mortality has fallen to the unprecedented figure of 57 per 1,000 births, compared with 59 the previous year, and continuing the marked reduction of the last four years. A warning is given that the adverse weather conditions of 1936 and the excessive prevalence of infectious disease in the first quarter of the year may have an unfavourable reaction on the next annual returns.

The returns for tuberculosis schemes show that during the year there were 21,537 beds available for the treatment of tuberculosis in institutions belonging to English local authorities. It is remarked that out of a total of 59,623 new cases of tuberculosis reported in 1935 the only information obtained by medical officers of health in regard to 2,106 of that number was that appearing on the death returns of the local registrars. The total notifications of pulmonary tuberculosis on the registers at the end of 1935 stood at 218,480 cases, and of non-pulmonary at 96,716. The decline in mortality from tuberculosis is noteworthy. For the first time the total number of deaths in England and Wales from all forms of tuberculosis fell below 30,000 ; ten years ago it was 37,500.

Adulteration of Food

The work which the Ministry carries out in safeguarding foods and drugs makes interesting reading. Strange things are done in the way of adulteration and misdescription. We are told of samples of dried " milk " consisting of starch, of " fresh " cream found to be heated cream, of " butter " consisting wholly of margarine, of " cream " cheeses made of skimmed milk, of " home-made " marmalade which was an ordinary factory product, of " fish " cakes containing no fish, of " chocolate " roll containing no chocolate, of " cherry " wine containing no extract derived from cherry, of " egg " pudding without trace of egg. Then we read of cream with boron preservative, of formaldehyde in milk, sulphur dioxide in potted meats, ale which contained phenol, tomato soup which contained copper, curry powder which contained lead, barley which contained talc, as well as the inevitable sand-containing sugar. The same story is repeated with drugs. Here is a " castor oil " which is camphorated oil, " sesame oil " which is rape oil, carbolic ointment deficient in phenol, " ammoniated " quinine tablets with no ammonia, tartrated iron containing arsenic, aspirin tablets containing zinc, and wineless orange quinine " wine." It should be added that the samples reported against by the analysts on sentry duty number only one in eighteen of those examined.

The Insurance Medical Service

The report of the Ministry is parsimonious in comment, but the figures regarding the medical service under the National Health Insurance Acts speak for themselves. First of all we have the background of very nearly fifteen million insured persons in England, and nearly 16,000 doctors engaged in insurance practice. The doctors receive just over six and a half million pounds a year in respect of their duties of attending and treating insured persons, and to this must be added further sums, of about £200,000 in each category, paid to certain doctors for dispensing and to rural doctors for mileage. No doctor's name was removed from the Medical List during the year, and only ninety-six doctors were " fined." In eighty-seven of these cases the dereliction had to do with the keeping of records in one way or another, or with infringements of the certification rules, and only six were cases of negligence in the treatment of the patient. The largest " fine "—£100—was for failure to return medical records.

Excessive prescribing comes into a different category of offences, but here again the figures are almost negligible. In only six cases was money withheld on this account, although as many as 840 visits were paid by regional medical officers to practitioners whose prescribing appeared to call for explanation. In nearly every case the explanation offered was satisfactory or the departure from a reasonable standard of prescribing was of a minor degree. The cost of drugs is rising. In 1935 it was three shillings per insured person, and the number of prescriptions rose by nearly two million to 59,832,000—in other words, every five insured persons had, on the average, twenty-three prescriptions issued on their behalf. The number of references to regional medical officers on the question of incapacity for work was 444,964, and the number of persons actually examined was 232,457, of whom 167,219 were found incapable, and 65,238 not incapable, of work.

Additional Benefits

The fourth valuation of approved societies has now been completed, and the results compare very well with those of the third valuation. There is a slight increase in the total surplus, but owing to increase of membership there is approximately the same surplus per member. The annual amount allocated under the 3,800 sanctioned schemes for the provision of treatment additional benefits is about £3,100,000, practically the same as that allocated under the last valuation. But some two million more insured persons are entitled to dental benefit, and a large increase has also taken place in the number entitled to ophthalmic benefit. Dental benefit is far and away the most popular of additional benefits, entailing an expenditure of £1,450,000. The amount spent on ophthalmic benefit last year was £348,000, on convalescent home benefit £102,000, and on hospital benefit and medical and surgical appliances smaller sums.

Much else in the report calls for notice, especially on the M.O.H. side. During the year under review the appointments of 103 medical officers of health were approved, and sixty-five of these will not engage in private practice. At the end of March last 417 officers out of a total of 1,045 did not so engage. It is stated that progress has been made during the year by county councils in the way of arrangements for securing that every medical officer of health appointed in future for a county district shall be restricted by the terms of his appointment from engaging in private practice. Arrangements of the kind have been formulated by twenty-eight county councils in England and are under consideration by the majority of the others.

The finances of the Department open up another huge subject—but the reader must already be surfeited with figures.

BRITISH COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

ANNUAL DINNER

The sixth annual dinner of the British College of Obstetricians and Gynaecologists was held at Claridge's on October 23rd, with the president, Sir EWEN MACLEAN, in the chair.

The Minister of Health's Speech

After the loyal toasts had been honoured the health of the British College of Obstetricians and Gynaecologists was proposed by the Minister of Health, Sir KINGSLEY WOOD. Although it was a young College, he said, it was none the worse for that ; its birth had been accompanied by some difficulty and danger, and at one time there had been a risk of its being stillborn. Great credit was due to the honorary secretary, Professor Fletcher Shaw, who conceived the idea of the College, and the late Professor William Blair-Bell, whose driving force had brought the idea to fruition. Since then seven years had elapsed, and the College had successfully tided over the difficulties of infancy. It was now a very " young hopeful," and exerting its influence all over the world. That the College was on a sound financial basis Sir Kingsley attributed to the fact that the president, like his predecessor, was a Scot ; and he was glad to know that, although Dr. Fairbairn had retired to Lossiemouth, his knowledge

and experience would still be at the disposal of the College. One phase of the work of the College was of increasing importance: its activities were by no means restricted to Great Britain ; it was a College of Empire. The Government was deeply interested in the progress India was likely to make under its new powers of self-government, and it was important that sound midwifery should be available for the women of India. It was his conception, Sir Kingsley continued, so far as the health services of this country were concerned, that success largely depended on the spirit of co-operation between the voluntary services and the State, and he hoped that through the Minister's Medical Advisory Committee this co-operation would be obtained. In connexion with the new Midwifery Act the College of Obstetricians and Gynaecologists had sent him a memorandum setting forth the principles that should be incorporated in a national maternity service, and he had read the president's address to the British Medical Association on this subject: these had been of much help and guidance. The midwife, he said, might make or mar the success of midwifery services in this country. It was necessary to emphasize that with the exception of one country the maternal mortality of Great Britain was the lowest ; but at the same time he felt everything should be done to reduce the present death rate. The secret of success lay in the word "co-operation." The medical profession was their first line of defence, and in the new attack on maternal mortality Sir Kingsley felt that they could rely on its help in this matter. "But I do not pretend," he concluded, "that the new attack is the solution of the problem."

In response Sir Ewen Maclean said that as president he followed in the footsteps of a man who had rendered brilliant service to the College—Dr. John Fairbairn. On behalf of the College he would like to congratulate him on being invited to go to Khartum to give advice on the curriculum and to examine. It was a great thing, Sir Ewen said, to have a Minister of Health who understood their difficulties. He had the valuable quality of changing into kinetic power the great potential power a Minister in his position possessed. Sir Ewen referred to the Minister's interest and activities in connexion with nutrition, and to the recognition of the importance of this subject in their specialty. Some such measure as the Midwives Act had long been looked upon as absolutely essential, but it was probable that the Act would not have perfectly smooth working. During the past year the College had issued certain reports, and one in particular on analgesia and anaesthesia in midwifery, the money for which investigation had been supplied by the Birthday Trust Fund ; in this connexion they owed a debt of gratitude to Sir Julien Cahn. At present the College had a combined fellowship and membership of 500, and no fewer than 180 were fellows and members oversea. Sir Ewen concluded with a reference to the benefactions of Professor Blair-Bell and to the activities of the College and its library.

The College and its Guests

The health of the guests was proposed by Professor R. W. Johnstone, who said that the guests had always been an important feature of the dinner of the College. He particularly welcomed the ladies, for to them members of the College owed their personal and professional existence. He would mention particularly the president's sister and Lady Simson. Among those to whom Professor Johnstone also referred were the Minister of Health—"the right man in the right place"—the President of the Royal College of Physicians of London, the President of the Royal College of Surgeons of England, the Master of the Society of Apothecaries, the President of the Royal Society of Medicine, the President of the Medical Society of London, the President of the British Medical Association, the Presidents of the Hunterian Society, the Harveian Society, and the Society of Medical Officers of Health ; the Vice-Chancellor of the University of London, Sir Arthur MacNalty, and representatives of the lay and medical press. They were glad to have with them that night Sir Julien Cahn and Lady Cahn, Dr. Arnold Chaplin, who had rendered such valuable services to the library, and Sir Frederick Menzies. He would refer again to the President of the British Medical Association, which was the largest of all medical organizations, and the greatest ; but that night they perhaps thought of Sir Farquhar Buzzard as the Regius Professor of Medicine at Oxford, and of the magnificent gift Oxford had just received from Lord Nuffield.

In reply, Lord Dawson of Penn said that all sections of the medical profession were fully represented at the dinner. The prestige and repute of this College would have all the sympathy and support of the older corporations, and he would like to add his tribute to the fact that the solution of the difficult problem of anaesthesia in midwifery owed its success to the activities of the College. Could we not, he said, do something to bring about a change in the attitude to maternity and stress the fact that this was a natural and safe procedure, the risks being much less than those attending a family party out in a family motor car on a Sunday? There was not much use, he continued, in knowing that the infant mortality rate was going down and that age was being prolonged unless they could be assured that the quality of the race was improving.

Sir Farquhar Buzzard, who also replied, said that he was glad to have an opportunity of saying a few words about the recent interesting event in Oxford. He must confess that he had no very great interest in obstetrics, but he would now come into closer contact with the branch of medicine represented by the College, because one of the conditions of Lord Nuffield's magnificent gift was that a chair of obstetrics and gynaecology should be established. They would agree, Sir Farquhar said, that another chair in that specialty would not be superfluous. They might expect that research in Oxford would take something from the atmosphere of sociology and biology that prevailed there.

MOTOR CARS FOR 1937

THE OLYMPIA SHOW

[From Our Motoring Correspondent]

The Olympia series of motor exhibitions organized by the Society of Motor Manufacturers and Traders, which came to an end on Saturday last, would appear, judging from the reports issued by several of the leading car manufacturers, to have been one of the most successful for many years. Not only was the attendance larger than usual, but the orders placed with the makers by motor traders indicates that they are looking forward to an increased demand for new cars during the coming year.

Cars for all Purses and Purposes

As was mentioned last week, the range of cars available to-day varies in horse-power from 7 to round about 50 and in price from £100 to well into four figures. The transport requirements of medical men vary so greatly that it is difficult to single out any one class of car as being specially suitable for their purpose. Much depends, of course, on whether the practice is purely a local, circumscribed one, or whether it extends over a large area, and again whether the locality is fairly flat or a hilly district. Then there is the question whether the car is intended to be used only for making one's rounds or whether it is to be employed for family and touring purposes. Taken in all, the saloon—which finds a place in all the different makers' range of productions—is probably the most useful style of car, but there are many doctors who prefer a coupé. The writer's own medical man, who formerly used a 16-h.p. vehicle, is now running a 12-h.p. saloon, which he finds meets his requirements quite well, and has the advantage of lower annual tax and running costs. Having in mind these varying requirements it may be said that the vehicles most likely to meet the needs of most medical men fall in price between £175 and £350.

Even below the lower of the two prices mentioned there continues a wide selection of cars, all of which, although relatively low-powered and with small bodywork, meet the requirements of many doctors. Thus between £100 and £150 there is a choice of seven makes, ranging from the 8-h.p. Ford to the Standard Flying Nine, with, in between, such popular models as the Austin Seven (now 7.8-h.p.), the Morris Eight, and the Singer Nine. Between £150 and £200 there are fifteen models, beginning with the two-cylinder Jowett at £158 and ending with the 12-h.p. Vauxhall at £195; other popular models in this category include the Austin Ten and Twelve, the Hillman Minx, and the Jowett Ten. In the price class between £200 and £250 there is a selection of nearly twenty models, including a number of the new 14-h.p. "family" motor cars, some with four and others with six-cylinder engines. At the lower end of this section there is the new Ford 22-h.p. V-8 saloon at £210, and, at the highest value, the six-cylinder Morris Eighteen, other popular models including the Citroën Twelve, the 12.1-h.p. and 17.9-h.p. Renaults, the 10.8-h.p. Rover, the new 12-h.p. Singer, the 14-h.p. Flying Standard, the 14-h.p. Vauxhall, and the 10-h.p. and 12-h.p. Wolseleys. The biggest section of all is in the case of cars costing between £250 and £300, among the more well-known models—the majority of which are provided with six-cylinder power units—being the 18-h.p. Austin, the 16.9-h.p. Hillman, the 12-h.p. Humber, the new 11-h.p. Lanchester, 21-h.p. and 25-h.p. Morrises, 12-h.p. Rover, 16-h.p. Singer, 20-h.p. Standard, 25-h.p. Vauxhall, and 14-h.p. Wolseley. There is also a wide choice in the £300–£350 class, outstanding cars in this group being the Rileys and Triumphs, the 14-h.p. Armstrong-Siddeley, 10-h.p. Crossley, 14-h.p. Lanchester, 14-h.p. and 16-h.p. Rovers, the new 20-h.p. eight-cylinder Standard, and the 16-h.p., 21-h.p., and 25-h.p. Wolseleys.

Features of some Leading 1937 Cars

Proceeding now to a brief reference to the new 1937 models of the leading manufacturers and the improvements which have been made in them, we come first, taking them in alphabetical order, to the Armstrong-Siddeleys, the range of which includes 14-h.p., 17-h.p., and 20–25-h.p. models, all of which are provided with six-cylinder engines and, for the ninth year in succession, with the Wilson self-changing gear. Mechanically there is no material change in these vehicles, such features as centralized chassis lubrication and permanently fitted jacks being retained. Attention has, however, been paid to the reduction of weight and to improving the design, comfort, and finish of the bodywork. Two styles of saloon are available on the 14-h.p. chassis, known last year as the Twelve Plus, both being listed at £320.

The Austin Company has an extremely wide range of cars for the 1937 season, from 7.8-h.p. to 23.5-h.p., all of which are fitted with improved bodywork designs, the steel panels being now insulated to ensure greater silence. Popular models include the Ten and Twelve four-cylinder cars, the former embracing a saloon or a cabriolet at £178 and the larger vehicle saloons at either £190 or £210. There is also a new Fourteen—actually 15.6-h.p.—with Goodwood saloon body, at £215–£235. Features of the last three-mentioned cars are improved brakes, forward engine mounting, longer springs, and easy-to-clean road wheels with low-pressure tyres.

British Salmson, Citroën, and Crossley

The British Salmson Company is now producing cars in three sizes—12-h.p. and 14-h.p. four-cylinder and 20-h.p. six-cylinder. The newcomer is the 14-h.p. available with either a coupé or five-seated saloon body, among the features being independent front-wheel springing and permanently fitted jacks. The B.S.A. Company, which last year produced both 10-h.p. and 12-h.p. cars, appears for the 1937 season to be confining attention to a 9.8-h.p. sports vehicle with front-wheel drive and independent wheel suspension. The Citroën Company is not only continuing its 12-h.p. and 15-h.p. four-cylinder cars with front-wheel drive and independent springing, but has introduced a new model known as the "Family Fifteen," which has the more conventional form of transmission to the rear wheels and the saloon of which has accommodation for five or even seven persons. Citroën prices range from £228 to 298. The Crossley Company is now confining attention to two models—10-h.p. four-cylinder and 13-h.p. six-cylinder. No material changes have been found necessary the features of pre-selective four-speed gear with automatic centrifugal clutch being retained.

Daimler, Fiat, and Ford

Apart from the high-powered models, chief interest in the Daimler vehicles lies in what was known last year as the Fifteen, but which is now equipped with an engine rated at 17-h.p. to secure a better performance, particularly as regards acceleration and hill-climbing. The usual Daimler features of fluid fly-wheel and self-changing gear are, of course, retained. With either saloon or coupé body the price of the vehicle is £465. The Fiat Company, whose cars are, as is well known, of Italian design, provided one of the novelties of the Show—a 6.7-h.p. four-cylinder vehicle with saloon body selling at £120. The chassis layout is of novel design, the engine being mounted in front of the radiator and arranged to drive the back axle through a four-speed gear-box. The springing of the vehicle is also on unusual lines, the front wheels being supported independently by means of a transverse semi-elliptic spring with special torque and thrust members and shock absorbers, while the rear springing is effected by semi-cantilever springs. The Fiat Balilla 11-h.p. model with a saloon, at £185, is continued in practically unchanged form, as is also the 15.7-h.p. six-cylinder pillarless saloon at £298. As for the Ford cars, the largely used 8-h.p. and 10-h.p. models are unchanged in design and price, the chief feature of the 1937 programme being the new 22-h.p. eight-cylinder four-door saloon listed at only £210. Mechanically, the design follows the usual Ford practice, while the bodywork, with its deeply domed wings and streamlined lamps, has a striking appearance.

Hillman, Humber, and Jowett

While unchanged in general design, the popular Hillman Minx car embodies numerous improvements, including the new easy-to-clean road wheels, concealed luggage compartment, draughtless ventilation, and synchromesh four-speed gear-box. Prices of this model range from a saloon at £163 to a foursome drophead coupé at £215. The Hillman Company is also continuing its 16.9-h.p. and 20.9-h.p. six-cylinder cars known as the Sixteen and the Hawk. Their prices have been slightly reduced, saloons ranging from £295 to £320, there being also a cabriolet at £395. The Humber Company is another concern which has made no important changes in its latest models, which comprise 12-h.p. four-cylinder, and 18-h.p. and 26.8-h.p. six-cylinder cars. Features of the "sixes" include what is known as the "evenkeel" suspension. In view of its proved efficiency and attractive appearance the Humber Twelve, at its greatly reduced price of £258, is likely to prove a popular model. A noteworthy feature of the new programme of the Jowett Company—the only British concern pinning its faith to the horizontal type of engine—is that the former 7-h.p. two-cylinder vehicle has been provided with a power unit rated at 8-h.p. Both this and the 10-h.p. four-cylinder car have been improved, both in detail and in general appearance. Each chassis is available with either standard or *de luxe* saloon bodies at £158 and £168 for the 8-h.p. and £189 and £198 for the 10-h.p.

Lanchester, Morris, and Renault

In place of the 10-h.p. car of last year the Lanchester Company has introduced one with an 11-h.p. four-cylinder engine, the saloon of which is listed at £298, this being the cheapest car on the market with the Daimler fluid fly-wheel and pre-selective change-speed gear. Still another new Lanchester is the "14 Roadrider," which

has a six-cylinder power unit and which, with either a saloon or a coupé body, sells at £330.

The Morris Company was among the first of the British makers to announce that its 1936 range of models and prices would be continued unchanged. Thus the models comprise 8-h.p., 10-h.p., and 12-h.p. four-cylinder, and 14-h.p., 16-h.p., 18-h.p., 21-h.p., and 25-h.p. six-cylinder vehicles. Perhaps the most striking of the series is the 14-h.p. model, introduced during the past summer, which, with a saloon body seating five persons, is listed at only £215, or at £225 with a sunshine roof. Purchasers of the larger vehicles can, at choice, have either a 16-h.p. or 18-h.p. engine at the same price, or, again, either a 21-h.p. or 25-h.p. power unit. It may be added that all Morris cars are now fitted with safety glass windows as well as windscreens, while all except the Eight are provided with the Jackall built-in hydraulic jacking system. In addition to saloons, cars with coupé bodies are available on all Morris chassis, with the exception of the 8-h.p. and the 14-h.p. The French motor industry is still well represented in this country by the Renault vehicles, which comprise 12.1-h.p. and 17.9-h.p. four-cylinder, a 26.8-h.p. "six," and a 35.8-h.p. "straight eight." Features of the vehicles are the wide bodywork designed to carry three persons on both front and rear seats. On the 17.9-h.p. chassis there is also a new body known as the Airluxe convertible saloon, which can be quickly converted from a closed to an open vehicle and vice versa.

Riley, Rover, and Singer

The Riley cars, which are largely of sports type, will appeal to the younger section of medical men. The range for 1937 includes the Monaco and Merlin 9-h.p. saloons at £298 and £275, and three 12-h.p. saloons at from £314 to £350. Among the special features of the Riley vehicles are what is known as the "pre-selecta" four-speed gear combined with an automatic clutch, centralized chassis lubrication, and an easy jacking system. In addition to continuing the 10-h.p. and 12-h.p. four-cylinder and 14-h.p. and 20-h.p. six-cylinder cars, the Rover Company has added to its range a Sixteen Six model, which is equipped with a 16.9-h.p. power unit. Features common to all Rover cars include automatic chassis lubrication, four-speed gear-box with free wheel, and built-in wheel jacks. Prices range from £248 for the Ten to £355 for the Sixteen. The Singer Company has an attractive range of cars for the new season, comprising the 9-h.p. Bantam, with saloons at from £132 10s. to £149 10s., and a newly introduced coupé at £159 10s. The latter, although only designed to carry two persons, resembles a close-coupled saloon, and has a sunshine sliding roof. Other new Singer models include a Super Nine saloon at £165 and a 12-h.p. four-cylinder car available either as a saloon at £225 or as a foursome coupé at £265. A feature of this model is the use of a combination of cloth and leather upholstery, leather being used at the points where the greatest wear takes place. The 16-h.p. six-cylinder Singer is being continued in unchanged form.

"S.S." and Standard

Another make of car which by reason of its low-built, attractive lines may appeal to the younger class of doctor is the Jaguars of the S.S. Cars, Ltd. Two models are available, 12-h.p. four-cylinder and 20-h.p. "six," the former having been advanced in price from £285 to £295. As usual the Standard Company has a large and attractive range of cars for the new season, all of them now bearing the name of Flying Standards. Only minor mechanical changes have been made, but the bodywork has been further improved and in some cases prices have been slightly reduced. The range comprises 9-h.p., 10-h.p., 12-h.p., 14-h.p., 16-h.p., and 20-h.p. models, with prices beginning at £149. One of the most popular models is a new Fourteen selling at £249, while a late addition to the range and an entirely new departure for the Standard concern is a 20-h.p. chassis with a V-type eight-cylinder engine, which, with saloon body, is listed at £349.

Talbot and Triumph

Still another concern which is continuing its 1936 cars in unchanged form, but at lower prices, is the Talbot Company. The large six-cylinder vehicles now range in price from £425 to £795; the popular model is, however, the 10-h.p. four-cylinder, which as a saloon is listed at £248. For the new season the Triumph Company is building cars with three sizes of engine, 10.8-h.p., 13.9-h.p. four-cylinder, and a 15.7-h.p. "six," at prices ranging from £288 to £368. Of low-built design, they have an attractive appearance, and are fitted with powerful hydraulic brakes.

Vauxhall and Wolseley

Building only cars with six-cylinder engines, the Vauxhall Company has been able to make a reduction in the prices of its 12-h.p. and 14-h.p. models, in which a number of improvements have been effected. The main features of independent front-wheel springing, synchromesh change-speed gears, no-draught ventilation, and an easy jacking system are all retained. The bodywork appearance has been improved by new designs of head-lamps, bumpers, and bonnet louvres. The 12-h.p. model is available as a standard saloon at £195, while in *de luxe* form both the 12-h.p. and the 14-h.p. are listed at £215, or as a coupé at £235. The chief new Vauxhall departure is the introduction of a 25-h.p. car replacing the former Big Six. Capable of attaining a high speed and of accommodating five persons, the new vehicle embraces all the well-known Vauxhall features and is available at prices ranging from £298.

Finally there are the Wolseley cars, which, generally speaking, remain unchanged from last year. The range comprises 10-h.p. and 12-h.p. four-cylinder and 14-h.p., 16-h.p., 21-h.p., and 25-h.p. "sixes," at prices beginning at £220. Probably the most attractive Wolseley model is the Family Fourteen, introduced in the middle of the past season, the body of which provides comfortable accommodation for five persons. A noteworthy point about this vehicle is the attention which has been paid to the question of interior ventilation, it being claimed that when travelling at a speed of thirty miles per hour the air is automatically changed at least once a minute.

Among the Accessories

No report of the recent exhibition would be complete without a reference to the accessory exhibits in the Galleries. Although cars to-day are turned out complete with almost every necessary accessory, there were shown numerous fitments which are likely to appeal to many medical men, while there are also available many useful articles in the way of car and garage heaters, special anti-freezing preparations for the water of radiators, radiator muffs, anti-dazzle headlights, and fog-lamps—to mention only a few—that should do much to provide just as comfortable motoring in the winter as in the summer. Now that we have reached the time of the year when, in addition to supplying the current for engine starting and ignition, the batteries are required to run the lamps for long periods, attention may be drawn to the home battery chargers such as the Westinghouse and Philips, by means of which the accumulators may be kept fully charged. Mention may also be made of the sets of spare head-lamp and side-lamp bulbs now supplied by various firms, the carrying of one of which can be recommended to medical men, especially to those whose practices lie in country districts where the roads are not provided with artificial illumination.

C. J. W.

The Public Health Department of the Japanese Home Office has allotted a sum of 100,000 yen for the organization of an exhibition of propaganda in favour of the prevention of tuberculosis, which will be held from October to March, 1937, in six large towns where tuberculosis is most prevalent.

France

[From our Correspondent in Paris]

Whither Medicine?

Surely the tendency of medicine is towards a national public health service which sooner or later will claim the bulk of the French medical profession. The outcry against this is already quite vocal ; rugged individualism dies hard. Yet the faults of the old system of complete liberty for doctor and patient to negotiate with one another are obvious enough. Take the distribution of doctors throughout the country as an example of the effects of uncontrolled private medical practice. The large towns are glutted with medical talent, much of which runs to waste or finds expression in unsatisfactory activities, while the country districts languish for want of proper medical care. A redistribution of doctors, less with a view to their own comfort than to the welfare of their patients, could hardly be effected without the adoption of a national scheme of medical service. The Pomaret scheme (not yet law), withdrawing the licence of all doctors to practise medicine after the age of 65, is a straw showing which way the wind is blowing. This scheme says in effect that it is just as reasonable to make an old doctor give place to a younger and possibly better man as it is to withdraw postmen, admirals, and policemen from the active lists. Which after all is another way of saying that medicine should be a national service, not a private bargain between doctor and patient.

The Vogue of the Sympathetic

It is wonderful how " sympathetic-conscious " we have become of late. At the one end of the spectrum there is the serious research of Professor René Leriche of Strasbourg. At the other there is " la sympathicothérapie," the most successful exponents of which are doing wonders, for themselves certainly, for their patients possibly. It is all a matter of touching up the sympathetic in the right place, at the right time, in the right way, and perhaps on the right patient. If all these and certain other conditions are fulfilled, the manifestations of tabes, hemiplegia, infantile paralysis, facial neuralgia, chronic rheumatism, angina pectoris, migraine, asthma, and its equivalents will fade away like dew before the sun. This therapeutic touching of the sympathetic has irreverently been referred to as " a mere tickling of the nose," but this is to confine the new treatment within too narrow geographical limits. For there is also the " touche rectale " as well as the " touche vaginale." To return to the other end of the spectrum, mention may be made of a recent report to the Academy of Surgery by Leriche and Fontaine, who gave an account of their experiences in 1,256 sympathectomies. It is also indicative of the scientific, as distinct from the commercial, interest in the sympathetic at the present time, that one of the three main subjects discussed this autumn at the French Congress of Medicine dealt with the sympathetic system.

Surgery in the Next War

It seemed almost as if the prophetic vision of H. G. Wells, who has a film showing in Paris just now, had infected the atmosphere of the forty-fifth Congress of French Surgery. Professor Rouvillois, who is at the head of the French Army Medical Service, peered into the future and told his audience what he thought would be the salient features of the surgery of the next war. It will, in his opinion, be a war of movement depending on mobile armaments. The attacker will penetrate deeply and carry out long-range raids with high explosives and gases. The Army Medical Service must therefore be both mobile and elastic ; there will be new duties, new difficulties. Of the greatest importance will be the prophylaxis of wound infections. It may be noted in this connexion that the French Parliament recently passed a Bill for the compulsory immunization of the Army against tetanus, diphtheria, and typhoid fever.

Welfare of the Medical Student

Last year the Paris Faculty of Medicine instituted a system of medical examination of students beginning their studies in medicine. The early detection and prevention of tuberculosis is the main object of this scheme, which is being pursued this year also. Further, the recent high diphtheria rate among medical students has led to the proposal that they should be Schick-tested as a matter of routine in order that the susceptible may be vaccinated against the disease.

The Funeral of Dr. Jean Charcot

The public funeral in Paris of Dr. Jean Charcot and other victims of the shipwrecked *Pourquoi-Pas?* was a most impressive manifestation. Charcot's hold on his countrymen's imagination was amazing. He stood for them as a symbol, and, much more, of the nation's instinct for adventure and exploration. Jean Charcot may not have had the striking physiognomy of his father, Jean-Martin Charcot, but he was a marvellous leader of men as well as a most patient and gifted explorer. Speaking of him at a recent meeting of the Academy of Sciences, the president, Professor Louis Bouvier, retraced Charcot's career and referred to his happy relations with the British Admiralty during 1915, when he was given the command of a British Submarine-chaser. Later in the war he pursued the same prey on a French boat. In one obituary notice a fellow medical student has traced Charcot's medical career, the choice of which depended more on the fact that he was the son of the great Charcot than on any innate taste for medicine. With his characteristic loyalty he gave medicine a fair trial, and it was only after he had tested in practice his potential gifts as a laboratory worker and clinician that Charcot put out to sea.

Ireland

Queen's University, Belfast

The provision of residential quarters for men students has been in the mind of the University authorities for many years, especially as the lady students, through the generosity of the Riddell family, have had the benefit of Riddell Hall as a residential hostel. Sir Richard Livingstone (the former Vice-Chancellor) kept this question of men's residential quarters before the public for some years, and now, largely as a result of his propaganda, the Queen's Chambers have been provided. Some years ago the University acquired the terrace of tall houses opposite the front entrance known as Queen's Elms, and as the leases of these became available they were not renewed. Early this year steps were taken to convert four of the houses into a hostel for men students. This was largely due to the generosity of certain friends of the University who contributed to a fund, the nucleus of which was formed some years ago by the late Mr. Henry Musgrave and was supplemented by Miss Porter and the late Professor James A. Lindsay and others. The reconstruction has been most successful, and will fulfil a long-felt need of university life in Belfast. There is accommodation for forty students, each being provided with a bed-sitting room and having the use of a large common room. The opening ceremony was performed by the Duke of Abercorn, who was accompanied by the Duchess, on October 20th. The Vice-Chancellor (Mr. F. W. Ogilvie) received the guests, and referred with gratitude to those who had made the provision of the hostel possible, and also to those who had made numerous gifts. In declaring the chambers open the Duke referred to the fact that the University catered for a large number of students who did not live in the city, and who had consequently to live in lodgings. The facilities now available would be appreciated, and he hoped that it would not be long before an extension of the scheme was feasible. The visitors were conducted through the

reconstructed building, and were much impressed by the comfort of the rooms, the decorative scheme, and the general air of homeliness which pervaded it.

Royal Victoria Hospital, Belfast

The extensive waiting list of the Royal Victoria Hospital has been a source of anxiety to the Board of Management for some time, and a meeting of life governors and subscribers was called to consider a scheme for providing extra accommodation. Lord Dunleath, who presided, said that the board could not regard the growing waiting list as a necessary evil, and the provision of more beds was a matter which would have to be faced. The suggestions were: to extend each individual ward and thereby increase the total number of beds by 102; and to build a block (to be known as the King George Memorial) for semi-convalescent patients, and so relieve beds in the main hospital. It was estimated that this would entail an expenditure of £100,000, and would necessitate an increase in the annual upkeep of £18,000. The work of the Royal Victoria Hospital in Belfast had not been diminished by the establishment of, and improvements in, the district hospitals as had been forecast. Severe and difficult cases from all over Northern Ireland still came to the Royal Victoria, and the outlying hospitals had only relieved it in regard to acute cases and some industrial accidents. It was announced at the meeting that the Working Men's Committee had inaugurated a million-shilling fund, and the honorary treasurer suggested that each life governor should be responsible for raising £100, thus providing a sum sufficient to meet the expense of the undertaking. In the event of this scheme of extended wards and the provision of a semi-convalescent block maturing, the hospital services of Belfast will be in an enviable position as regards centralization and facilities for teaching and training. At present the Royal Victoria Hospital is in intimate relation with the new Royal Maternity Hospital, the Queen's University Pathological Institute, and the Belfast Hospital for Sick Children; and, in addition, a paying patients' block and large nurses' home are nearing completion and will be ready for use early next year. It is to be hoped that the new scheme will soon be assured of success.

Scotland

Modern Tendencies in Treatment

Professor Derrick Melville Dunlop, who was recently appointed to the chair of clinical therapeutics in the University of Edinburgh, in his inaugural address on October 23rd said that some of the most important drugs of to-day had been discovered by chemists employed by firms. The field to be reaped in this way was of vast extent. Workers in clinical research who had the necessary training and competence for investigation were few, and it was true that only a small fraction of research publications were of any real value to science. Nevertheless, the mere attempt to do such work was of immense value by training the individual in intellectual honesty. The sick tended to believe in magic and also to crave for authority. This was of the greatest use to physicians in treatment, but it had been of even greater use to the quack. To-day there was more criticism of the medical profession and more scepticism as to the value of its services than ever before. There was another reason for the popularity of unorthodox principles; it was probable that unorthodox medicine owed some of its success to neglect of certain techniques by the medical profession. For example, osteopathy might be said to owe its existence to some neglect of the field of manipulative surgery, and naturopathy to an over-emphasis on physics. The bottle of medicine had bulked too much in the past in medical treatment, and much of the medicine prescribed was useless and sometimes given to the exclusion of other forms of necessary treatment. The less scrupulous firms of manufacturing chemists had found, through the medical profession, a ready sale for pills made out of the endocrine glands of animals, and this was a return to the medicine of savages, who believed that if one ate the heart of a lion one would grow strong. Doctors ought as much as possible to use drugs whose action was well known; and when they came to practise, a knowledge of the fundamental principles of dietetics was important, for in many disorders the prescription of a wise diet was of greater value than the prescription of medicine. Dietetics was a new subject, and almost every day one heard of some new cult. The fact remained, however, that many diseases were due to people not taking a sensible mixed diet. Much of the future of medicine and social reform depended upon a wiser and more adequate diet being secured for those under the care of physicians and public health authorities. Good diet, fresh air, and happiness were a great therapeutic trinity, and perhaps the greatest of these was happiness. If doctors were able to give advice to their patients in their difficulties so as to make them happier, they would do a great deal to make these patients healthier. Doctors should go into practice ready to use potent drugs for definite purposes, with a knowledge of dietetics and of the laws of health, and an interest in, and love of, humanity.

Glasgow Post-Graduate Courses

The winter session of the Glasgow Post-Graduate Medical Association opens next month. A series of weekly demonstrations for practitioners on Wednesday afternoons will commence at the Western Infirmary on November 4th, when Professor Archibald Young will deal with sympathectomy and the relief of pain. The demonstrations, which will cover a wide range of subjects, have been arranged on similar lines to those of previous years. The fee for the course is three guineas. Courses have also been arranged at the Glasgow Eye Infirmary for those interested in ophthalmology, and facilities for the study of clinical obstetrics and ante-natal work are offered by the Royal Maternity and Women's Hospital. A practical class on refraction will be conducted by Dr. Janet F. Steel at the Ophthalmic Institution. The staff of the Ear, Nose, and Throat Hospital has arranged demonstrations on ear, nose, and throat affections, and a course in radium therapy is offered at the Glasgow and West of Scotland Radium Institute and at the Glasgow Royal Cancer Hospital. A limited number of clinical assistantships are available at most of the institutions taking part in the work of the association during the winter months as well as at other times of the year. Full particulars can be obtained from the secretary, Post-Graduate Medical Association, the University, Glasgow.

Sir Godfrey Collins and Scottish Health Policy

Little has been said in the many excellent obituary notices of Sir Godfrey Collins of his interest in, and efforts to improve, the health of the people of Scotland. Health problems in Scotland constitute but a section of the multifarious duties of the Secretary of State, but Sir Godfrey Collins was under no delusions as to the importance of health in the general well-being of the community. A tribute to his concern for the health of Scotland was paid by Lieut.-Colonel Colville, Parliamentary Under-Secretary of State for Scotland, at a recent meeting in Edinburgh. Sir Godfrey's ability, he said, to see how the many problems and measures that came before him would affect the daily lives of the men and women of Scotland was exemplified in his handling of health policy. The Government was considering measures for increasing the facilities for physical training and recreation, and had other measures in hand for reinforcing and extending organized health effort. It was thanks to Sir Godfrey Collins that in Scotland they were in a position to see the problem in its entirety, and had a plan of the whole field to help them in determining lines of action. The Committee on Scottish Health Services which Sir Godfrey set up presented a conspectus of this problem of national health and put it against its proper background of social and economic conditions and modern scientific knowledge.

England and Wales

Anaesthetics for Midwives

A recent resolution, passed by the Central Midwives Board for England and Wales, permits the administration by midwives of gas and air by Minnitt's or similar apparatus for the purpose of producing analgesia during labour, provided that certain specified conditions are complied with. The midwife must have received instruction in obstetric analgesia at an approved institution ; she must have a written statement from a medical practitioner who has examined the patient within a month of the confinement, certifying that the patient's general condition is suitable for gas-and-air administration ; another person—either a State-certified midwife, a State-registered nurse, a senior medical student, or a pupil midwife—must be present during the administration. The National Birthday Trust Fund states that great progress has been made in the production of cheap portable machines for this purpose and in arrangements for distribution of gas cylinders. Portable midwives' models will shortly be on the market at prices ranging from eight to twelve guineas, while gas cylinders (50-gallon size) can be supplied, delivered, and collected at a flat rate charge of 3s. 6d. It is stated that in a series of 1,065 cases at the Wellhouse Hospital, Barnet, the actual cost of gas, including delivery, worked out at 2s. 3d. per head. This information should be of interest not only to midwives but also to medical practitioners who engage in obstetric work.

Welsh Board of Health

An account of the work of the Welsh Board of Health during the past year is contained in the annual report of the Ministry of Health for 1935–6, which has just been published (H.M. Stationery Office, 1, St. Andrew's Crescent, Cardiff, price 5s. net). The report points out that the standards of the health services in Wales vary a good deal, and that in some areas there is considerable room for improvement. In the sparsely populated rural areas it is often difficult to establish full services, and heavy unemployment in the industrial districts has presented special problems. The periodical surveys undertaken by the Department have shown that there is insufficient hospital accommodation, more particularly in the rural parts, and that there is need especially for extension of the maternity services. Satisfactory clinical services for venereal diseases have been established in the industrial areas, but it is often difficult to provide adequate facilities in rural districts. The Department has suggested to local authorities that they should consider the advisability of appointing a peripatetic whole-time officer, to serve a number of counties, who could carry out treatment at the surgeries of general practitioners and interest them in modern methods of treatment. During 1935 greater use was made of the ante-natal clinics by expectant mothers, and the number of infant welfare centres increased ; in 1930 infant welfare centres numbered 277, at the end of 1935 there were 310. A high maternal mortality rate persists, the rate for Wales for 1935 being 5.89 per 1,000 births, compared with an average rate of 6.09 for the three preceding years. The infant mortality rate for 1935 was 63 per 1,000 births, which is the lowest rate so far recorded for Wales. The tuberculosis death rate was the second lowest recorded for the principality ; the lowest figure was achieved in 1934. The treatment of tuberculosis in Wales is carried out by the Welsh National Memorial Association on behalf of the county and county borough councils, who paid to the association £241,000 during 1935–6. The provision for 1936–7 is £259,000. There are twelve voluntary associations for the blind in Wales, and all except two of the seventeen county and county borough councils have now made provision for affording financial assistance to the unemployable blind under the Blind Persons Act.

The Guild of St. Luke

The annual general Chapter of the Guild of St. Luke was held on October 22nd. The chief business of the meeting was voting grants to the various missionary and philanthropic societies which the Guild supports. A special donation of £100 was given to the Universities Mission to Central Africa in addition to the usual annual grant of £50. The Royal Medical Benevolent Society, the London Diocesan Council for Preventive and Rescue Work, and other bodies received smaller grants. The possibility of further grants later in the year to other Church societies engaged in work of special interest to the medical profession was considered. This Guild consists of Church of England practitioners who desire to promote and defend the faith especially in their profession. Membership is also open to students. The Guild was founded in 1864 as an outcome of the Oxford Movement. Members subscribe to a simple rule to encourage and support good churchmanship, and the Guild exists to provide fellowship for such medical men and to further their principles in the ethics of the profession. Those interested may obtain information from the secretary, 164, Ducane Road, London, W.12.

The Chelsea Clinical Society

The annual dinner of the Chelsea Clinical Society was held on October 20th at the Rembrandt Hotel, with the president, Mr. A. Rugg-Gunn, in the chair. The health of the society was proposed by Sir Arnold Wilson, M.P. He said that as former High Commissioner for Mesopotamia he knew the value of an efficiently organized medical service. As chairman of the Industrial Research Board for four or five years he had been in intimate contact with medical men, and had found them in really close touch with daily life. The other professions—the Church, the Law, education—seemed to him to have lost this real contact with life. The lawyer, he thought, preferred litigation to law ; but the doctor, though interested in disease, always put the public health first. As a Member of Parliament he (Sir Arnold) had made a special study of health problems. After a vigorous criticism of the voluntary hospital system and the national health insurance system he said that he longed to see doctors forming a political body and applying themselves to the establishment of a proper medical service. Preventive medicine, he said, was at present at a discount. It was high time the whole of the medical system in this country was overhauled, but reform must come from within. Great pains were taken in the selection of men for the Civil Service ; surely such pains should also be taken in the selection of men for the medical profession. A ring of great hospitals in London were being rebuilt ; were they, he asked, being rebuilt in the right place? The medical profession, he concluded, should look after its own affairs, while there was yet time. In response, Mr. Rugg-Gunn said how glad the society was to have with it that night the Norwegian Minister, Sir Arnold Wilson, Commander Stagg, and the presidents of kindred societies. The health of the guests was proposed by Mr. A. Lawrence Abel, whose gift as a raconteur was greatly appreciated. Sir John H. Parsons, F.R.S., and Commander Stagg replied.

Newcastle Health Report

The annual report for 1935 of the medical officer of health for Newcastle-upon-Tyne is remarkable for the quantity and quality of its statistical tables. One of these, which when unfolded occupies the equivalent of seven pages of the report, gives the population, birth rate, and special mortality rates during the period 1885–1935. It is interesting to note that during this period, which has witnessed the halving of the general death rate, a decrease in infantile mortality from 174 to 86 per 1,000, and a decrease in the zymotic death rate from 4.3 to 0.5, no comparable improvement is shown in the field of maternity. The maternal death rate shows only a slight diminution, while puerperal sepsis is responsible for twelve deaths, giving a rate of 2.46 per 1,000, as compared with

four deaths and a rate of 0.68 fifty years ago. The report attributes this to the intolerable housing conditions, the overcrowding, and the poverty still to be found in some parts of the city. Diphtheria provides the main epidemiological feature of the year under review. The number of cases notified was 675, the largest ever recorded in the city, with thirty-five deaths. The scope of the immunization clinics, however, is being increased, and 1,826 children were immunized during the year. It is surprising to read that bacillary dysentery has been prevalent in Newcastle since 1928. Of 138 cases notified the diagnosis of eighty-four was confirmed bacteriologically. Two outbreaks, involving forty-nine cases, occurred in the Newcastle General Hospital. The disease accounted for a total of thirteen deaths, including one which terminated the only case of amoebic dysentery. The majority of cases occurred in children ; two were of the fulminating type, and one of these, a boy of 10, died within a few hours of the onset of the illness. The report contains an instructive table, arranged on the plan of a genealogical tree, showing the wide ramification of activities dependent on the Newcastle Health Department.

Reports of Societies

CHRONIC ULCERATIVE COLITIS

At a meeting of the Subsection of Proctology of the Royal Society of Medicine on October 21st, with Mr. G. Gordon-Taylor presiding, Dr. J. Arnold Bargen of the Mayo Clinic gave an address on " The Management of Chronic Ulcerative Colitis in Uncomplicated Cases."

Dr. Bargen said that the disease generally known as chronic ulcerative colitis was an infectious disease with characteristic clinical, pathological, and bacteriological features. The condition was probably poorly named, for such a nondescript term might include many kinds of ulcerative disease. It was an obstructive infectious disease of the colon, of which intractable bloody dysentery was the most striking character. It might begin insidiously or in a fulminating way. It was comparable in its damaging nature and progression to advancing tuberculosis. Some held that chronic ulcerative colitis was the end-stage of infection by micro-organisms of what used to be called the colon-dysenteric group. Others believed that the aetiology had as its basis infection by a variety of organisms ; that many kinds of bacteria under special conditions might initiate the pathological process and be responsible in some instances for its continuance. Recently it had been suggested that secondary invaders might play a part in advanced cases. Deficiency of vitamins, minerals, and other substances, lesions of the skin, oedema, peripheral neuritis, abnormalities of the inorganic constituents of the blood, and other evidence of failure of proper absorption of certain essential foods had been noted in cases in which patients had been seriously ill with advanced and destructive chronic ulcerative colitis ; but such states of deficiency must be regarded as late complications rather than integral parts of the condition. Investigators who suggested that symptoms of deficiency were of primary importance and attributable to failure of intake of food or of absorption were very likely " putting the cart before the horse." Another hypothesis pointed to disturbance of body metabolism, such as occurred in diabetes, goitre, and similar diseases. This might have some rational basis, but experimental evidence was not at hand to substantiate it. Others said that residual infection following infestation by amoebae was the cause ; but clinical and experimental evidence had refuted this idea.

He himself believed the disease to be caused by infection by a specific micro-organism or a group of micro-organisms. From the standpoint of an infection it was somewhat similar to pneumonia, or, in less severe cases, to bronchitis. A diplo-streptococcus of characteristic properties was at least one of the many instigators of the disease. Experience had taught that the best and quickest way of isolating it was by obtaining material for culture through the proctoscope from the rectal lesions. Very often the organism could be cultivated directly from the rectal discharges. The organism described had been isolated in about 80 per cent. of patients with chronic ulcerative colitis examined at his clinic. Tonsillectomy, removal of infected teeth, and acute infection of the upper part of the respiratory tract had caused marked, though temporary, exacerbations of the disease. It was not uncommon for severe colds to be followed by intestinal upset, and this might result in real ulcerative colitis. No particular type of individual was more prone to this disease than any other. Patients as young as 2 and as old as 80 had been seen, but the majority were in the second to the fourth decades of life. It was rare to find more than one member of a family afflicted, and in no case had both husband and wife been found to suffer from the disease.

Pathology

It was fortunate that in this disease the sigmoidoscope made possible the observation of the pathological changes in the living patient from the inception of the disease to its well-advanced stage. Much could be learned from digital palpation of the intestinal wall. There was no sharp line of demarcation between the healthy and the abnormal tissue. In the first stage numerous small haemorrhages were found scattered about in a diffusely inflamed mucosa. In the second stage, oedema of the mucous membrane appeared, and in the hyperaemic and oedematous mucosa little spots appeared immediately below the mucous membrane, and, rupturing through it, represented the true miliary basis of chronic ulcerative colitis. Altogether some five separate stages of the disease could be recognized—four of activity and one of remission. Later several changes occurred, varying according to the amount of deformity produced in the walls of the bowel. In the fibrous areas would be found scars ; in severe cases in which no mucous membrane was left intact, these scars were of much importance, because they were the " foot-prints " of the original attack. The contraction of the bowel wall was a constant feature, and one of the cardinal diagnostic characteristics of chronic ulcerative colitis. As seen through the proctoscope this structure was inflamed, and might vary from the slightest degree of contraction to a stricture through which it was impossible to pass an instrument of greater diameter than the average cystoscope.

A presumptive diagnosis of chronic ulcerative colitis could often be made from the history alone. The onset might be insidious or fulminating. Loss of weight was alarming, and was attributable to many factors, including frequent evacuations, extreme toxaemia, and loss of appetite. In the advanced cases the face was drawn and anxious, with a greyish-yellow pallor. Pain was not a prominent feature, but straining at stool was common.

Treatment and General Outlook

The attitude towards this disease in the last decade had changed from despair to a certain hopefulness. It was well to think of it as the modern practitioner thought of tuberculosis, not in terms of cure, but of control. Uncomplicated cases—which meant 85 per cent. of the cases in his experience—constituted a medical problem. Certain complications, such as neoplasm, stricture, perirectal abscess, called for surgical collaboration. Dr. Bargen instanced nine lines of treatment: rest and restful recreation, diet, sera and vaccines, nursing care, drugs, transfusions, supportive measures, irrigations, and removal of infective foci. In the acute fulminating case rest in bed and absolute quiet should be maintained until the patient was free from fever. Patients easily became discouraged. The slightest worsening of symptoms might undo days of improvement, owing to the patient's mental attitude towards the change. The optimistic view was essential. Occupational therapy could be useful.

In the past many physicians restricted the food, so that the patient lost strength and ability to fight the infection. The first problem was the training of the appetite and the giving of foods digested almost entirely in the stomach and

small intestine and leaving little residue for the colon. When the symptoms were acute the patient might be able to take only small amounts of highly concentrated foods; in the worst cases a solution of glucose could be injected intravenously. Proteins in most forms were very desirable; vitamins could be supplied in concentrated forms, such as fruit juices, cod-liver concentrates, or irradiated ergosterol. Milk was not a no-residue food, and was not well tolerated by many of these patients. Boiling the milk made it only slightly more digestible. A concentrated serum produced by immunizing horses against many strains of diplococcus found in the diseased tissues of patients had been administered in acute fulminating and in chronic cases. The injections were given every twelve hours, beginning with 1/10 c.cm. of the concentrated antibody solution, and increasing at each injection by 1/10 c.cm. until a maximum amount of 3 c.cm. had been given. Improvement in symptoms as a rule ran parallel with the local or general reactions to the serum. Generalized serum sickness appeared but rarely. When improvement occurred an autogenous vaccine from the rectal ulcers in each case was administered subcutaneously every three to five days over several months. Antidysenteric serum had given favourable results in a few cases, but in many the serum sickness had been so severe that the good effects were nullified.

No single drug had been of more than occasional help. Among the substances which seemed to have had value in active cases were tincture of iron, gentian-violet, and arsenic, but there had been a tendency towards indiscriminate use of arsenical preparations in his country. Various mercurials had been given with indifferent results in his experience. Insoluble powders such as bismuth were helpful in thickening the intestinal content, and at times in reducing the number of discharges. Blood transfusion in some cases was of inestimable value. It might be given to fight the toxaemia in cases of severe sepsis and also in anaemia and weakness to make up the loss of blood. The transfusions, in small amounts, should be given from four to seven days apart. Cardiac stimulants occasionally were required. The most that could be accomplished by intestinal irrigation was cleansing of the surface, and that only for a few minutes. Foci of infection should be removed in the stages of remission, or at least of quiescence.

Dr. Bargen added that his conclusions were based on 1,924 cases seen over a period of fourteen years. Out of this number ileostomy or other intestinal operation was performed in only eighty-seven, and there were forty-four post-operative deaths.

General Discussion

Mr. J. P. LOCKHART-MUMMERY referred to the severity of the disease among young people. His experience was that very few patients under the aged of 17 or 18 survived. The disease was generally fulminating in these young persons, and they went downhill rapidly. He was glad to note Dr. Bargen's insistence on nourishing diet. In the past patients had sometimes been put on starvation diets and made worse. They should be put on a diet which maintained their weight, and as the small intestine was as a rule perfectly healthy in these patients, there was no reason why the diet should not be a full one, though with not too much residue.

Dr. P. H. MANSON-BAHR gave an analysis of 735 cases of dysentery from the Tropics: 40 (5.4 per cent.) proved to be ulcerative colitis; 484 (65.9 per cent.) amoebic dysentery; 121 (16.4 per cent.) chronic bacillary dysentery; 66 (8.9 per cent.) colitis secondary to amoebic dysentery; and 24 (3.2 per cent.) colitis secondary to bacillary dysentery. There was an extraordinary analogy between the pathology of bacillary dysentery and the acute form of ulcerative colitis, but because two diseases had similar pathology the mistake must not be made of supposing them to be due to the same actiological agent. He agreed as to the value of multiple small blood transfusions. Cases that got some sort of protein shock reaction as a result of blood transfusion did the best. He mentioned two measures which he had found of some value. One was an enema of bismuth sublimate in olive oil. The other was rivanol, which acted as an antispasmodic, and relieved the patient's symptoms in a marked degree.

Mr. RALPH MARNHAM had collected from nine of the London teaching hospitals and St. Mark's the records of in-patients suffering from this disease during the period 1925–9. The number of cases was 214 (males 30 per cent., females 70 per cent.), and the average age was 35. Of this number 67 (32 per cent.) died in hospital, and of the 147 who left hospital it had been possible in 1935 to trace 120. Of these 120, 25 had died, 11 were in the same condition with practically continuous diarrhoea, 57 had recurrences, and 27 were reported as "cured." The treatment given had been medical in 130 and surgical in 84. The total mortality, including the patients who died in hospital and those afterwards traced, was 49.2 per cent. The medical treatment included colonic lavage of all sorts; a certain number were treated with antidysenteric serum and zinc ionization, some only got orange juice, and some got practically nothing. He agreed that colonic lavage was useless in most cases and detrimental in many.

The Laboratory Aspect

Dr. L. P. GARROD thought that from the laboratory side there was something to be said against Dr. Bargen's conclusions. He had listed his treatments under nine categories, and to these he had added an optimistic attitude on the part of the physician—an attitude which he obviously exemplified himself in extreme measure. That being so, his success in the treatment of the disease could hardly be attributed to his particular innovation, the concentrated serum. Why should it be necessary sometimes to give the serum intravenously? There was no difference in the antibody whether given intravenously or intramuscularly, except in the rate of its absorption. If a greater effect was obtained by intravenous administration in a chronic disease the serum must be acting in some different way, producing a shock-like effect.

Dr. JULIUS BURNFORD referred to the multiplicity of treatments and the fewness of reported cures. There seemed to be no evidence that serum was any more specific in its results than any other treatment. This horrible disease must be regarded at present as incurable. It was also becoming more frequent. Some years ago it was a very rare disease, and he remembered Sir William Allchin collecting five specimens of ulcerative colitis which were mounted at that time in the Westminster Hospital museum. The disease was now encountered every day, and he was not prepared to admit that greater skill in diagnosis accounted for the greater frequency. He had had some success in the early days with zinc ionization, but the disease seemed to have become much more serious, and only occasionally was improvement forthcoming with that method. He believed in a full diet, giving his patients whatever they wished to eat, and not considering whether there was roughage or not. He did not think that milk diet was the harmless bland diet it was sometimes thought to be. He described good results in two cases in which operation was performed, intubation carried out, and through the intubation oxygen passed continuously.

Dr. DOROTHY HARE urged careful attention to the history of these patients. In a small group of cases she had studied closely the history nearly always revealed some early premonitory bleeding or bowel symptoms. This was followed later, perhaps after a year or even longer, by a more severe attack. She believed that medical treatment in this disease would give better results than surgical, but only if it was brought in early. Early diagnosis and early treatment by diet and other suitable measures would, she believed, make a great difference to the prognosis of this disease.

Mr. TURNER WARWICK said that with regard to the present treatment of ulcerative colitis he knew nothing better than the optimistic treatment which Dr. Bargen had urged. He himself might claim to be even more optimistic with regard to the outlook for ulcerative colitis than Dr. Bargen himself, which optimism he based on the fact that the real cause had not been discovered. If Dr. Bargen would devote himself to further investigation of the ultimate cause of ulcerative colitis the outlook would be better still.

Mr. R. S. CORBETT referred to two cases treated this year by terminal ileostomy. The first was a woman of 22, whose illness had lasted for two years, and who, after discharge from the hospital, came back again very ill indeed; her weight was reduced to 4 stone, and she was completely bed-ridden. He carried out an ileostomy, and within six weeks she had doubled her weight, and was now up and about and leading a normal life. The other case was a women of 36, who also had the trouble for two years. She had repeated haemorrhages, and it was felt that the drastic step of terminal ileostomy was justified. This woman died twenty-four days after operation from a bronchopneumonia which led to empyema, but the post-mortem examination showed the bowel to have almost completely recovered, one area only in the large bowel showing any ulceration at all.

Mr. E. T. C. MILLIGAN drew attention to the large number of cases of less severity which came to the out-patients' department, cases chiefly marked by the patient's mental attitude to his disease, and now and again by the passage of blood. Some of these cases turned into the ulcerative type, but others remained for years in the same condition, and at the end showed no ulceration, and healing was complete.

Dr. BARGEN said that from his laboratory and clinical observation he felt strongly that the particular type of streptococcus he had named was the exciting factor, whatever else might enter into the picture afterwards. He thought it justifiable to carry on the treatment on that basis until somebody came and proved it all wrong. The last word had certainly not been said about treatment. He did not think they were justified in putting these people in different groups, because so often he had seen a patient with mild rectal proctitis or procto-colitis suddenly develop after weeks or months an advanced colitis. All these cases should be put on a programme of management in which details were most important and no single item overshadowed all the rest.

LUPUS VULGARIS UNDER TREATMENT WITH TUBERCULIN

At a meeting of the Section of Dermatology of the Royal Society of Medicine on October 15th Dr. H. S. BURNELL-JONES and Dr. R. CARSWELL presented a case of a man with long-standing lupus vulgaris who was under treatment with tuberculin and showed distinct improvement. Dr. Burnell-Jones said that the case, because of extensive involvement of the nasal cartilage, pharynx, and larynx, was not a promising one to treat, but the patient was, or had been, getting worse for a year. Tuberculin was tried as offering a chance of obtaining improvement, and at any rate the man was now working and his immunity had been raised. He exhibited eight charts indicating the man's condition and his improvement under tuberculin. The case was not claimed as being more than encouraging so far, but only 1/50 of a cubic centimetre had as yet been given, whereas 2 to 4 c.cm. was the order of dosage mentioned by Koch as adequate or effective treatment. Dr. Carswell, in discussing whether complete cure was to be expected, referred to some cases in literature, especially a case mentioned by Heron[1] in which complete cure was effected, and of which the author wrote that "as regards the length of time the case has continued without relapse it is, I believe, unique among those treated for the cure of lupus vulgaris by the new or the old tuberculin." Dr. Carswell added that in a case of the severity of the one shown to the Section it would be a great advantage if sanatorium conditions could be obtained. Tuberculin exploited the vital properties of the body, and its disturbing effect should be reduced and its beneficial action supported by this basic principle of treatment. It was proposed to bring the case periodically before the Section in order that further results of treatment might be examined and discussed. The case was by no means an easy one, and it would be of great service if further cases of a simpler type could be investigated.

[1] *British Medical Journal*, 1898, ii, 77.

DIFFERENTIATION OF THE GLYCOSURIAS

At the first meeting of the session of the Pathological Society of Manchester on October 14th Dr. T. H. OLIVER delivered his presidential address on "The Differentiation of the Glycosurias."

Statistics, he said, showed that although insulin had increased the expectation of life of diabetics by some three and a half years, this improvement was confined to the younger patients. After the age of 55 the mortality was the same as prior to 1922. Clinical experience also showed a considerable number of cases in which there had been little or no benefit from insulin, but this could not be expected to act in cases in which the glycosuria was not due to an islet deficiency. For accurate prognosis and treatment a much greater differentiation of the cases was necessary.

Cases might be classified into: (1) Those in which there was an increased mobilization of carbohydrates and fats from the storehouses. In this group the central nervous system, pituitary, and thyroid were the primary causes. (2) Those in which there was a defect in the islet tissue: in this group there was often a history of increased obesity immediately before the onset of the disease. (3) Those in which the primary defect was in the liver—cases associated with gout, cholecystitis, pernicious anaemia, and haemochromatosis. (4) Those in which an unknown factor, which enabled the muscles to utilize sugar, was missing. This last group was commonly associated with arteriosclerosis, and in these patients hypoglycaemia after insulin was not produced by exercise, but when it did occur was due to over-storage. Here the renal threshold was often high and was probably a conservative process, as a high blood sugar was necessary for them. It was essential, therefore, to differentiate between the optimum and the so-called normal blood-sugar level. Any attempt to reduce the blood sugar to the region of 0.1 per cent. may make these patients ill, and the results of treatment must be judged not by a laboratory ideal, but by the clinical improvement attained.

DENTAL SEPSIS

At a meeting of the Glasgow Royal Medico-Chirurgical Society held on October 16th, with the president, Mr. GEORGE H. EDINGTON, in the chair, a discussion on focal sepsis was opened by Dr. J. A. W. McCluskie and Mr. B. H. Humble.

Dr. MCCLUSKIE referred particularly to focal sepsis in the mouth and its relation to the production of disease in joints, heart, and kidneys. He thought that in many instances a closer co-operation between dentist and doctor would be beneficial to the patient. Mr. HUMBLE said that residual infection of the jaws after the extraction of all the teeth could be divided into two types: first, where buried roots remained; and secondly, where no buried roots remained. Statistics from the Mayo Clinic, Rochester, from New York City, and from London showed that about 25 per cent. of all people wearing dentures had at least one root left which could only be discovered by *x* rays. Even a minute portion of a root might cause serious systemic infection.

Treatment

The removal of the root or roots would usually clear up the condition. A post-operative *x*-ray examination of the jaws would be a safeguard to the dentist and the patient and a preventive of future trouble. Residual infection with no buried roots depended on the state of the patient's health, the severity of the operation, and the type of patient. The so-called rheumatic type were more usually affected, and the patient had probably retained infected teeth for such a long time that the recuperative powers were not equal to the task of removing the infection after the extraction of the teeth. Such conditions as arthritis, antral empyema, and sciatica had been cured after the treatment of the residual infection.

Diagnosis was not easy. If dentures were inserted they felt uncomfortable, and the patient complained of soreness

of the alveolar ridge, usually well localized. Radiographs might show all degrees of rarefying or sclerosing osteitis. There might be only haziness of the trabeculae or well-marked persistent areas of apical rarefaction, which condition might go on to residual dental cysts. Where the original infection resulted from marginal gingivitis the bone might fail to form a compact outline, exposing the unjoined ends of the cancellous structures within the soft tissues. The alveolar edge would appear rough and uneven.

Curettage of the diseased area had been advocated by some authorities but decried by others, as it was uncertain that all the diseased bone had been removed by this method. Bowdler Henry had introduced treatment by local diathermy with striking results. Talbot believed that residual infection was an indication of general systemic weakness, and that it was the general condition which should be treated; he used local applications of infra-red rays to the wounded gums and general irradiation with ultra-violet rays.

LATE SEQUELS OF HEAD INJURIES

At a meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland on October 9th the president, Mr. A. A. McConnell, opened a discussion on the late sequels of head injuries. He pointed out the difficulty of deciding what, if any, organic lesions were present in the brain some months after a severe injury. He mentioned the lesions that had been described in patients dying from intercurrent disease, and expressed his belief that the post-traumatic state had usually an organic basis. He attempted to distinguish between the post-traumatic state in which treatment of any kind was of questionable value and those cases of unresolved contusion, abnormalities of the circulation of the cerebro-spinal fluid, and local meningeal adhesions, in which appropriate treatment produced good results. He then described cases of subdural haematoma, the symptoms of which had appeared days, weeks, or months after the injury, and he emphasized the pitfalls of diagnosis of this condition. He reported some cases of excision of cerebral scars in patients suffering from epilepsy; in some instances he had amputated the greater part of one or both frontal lobes with apparently beneficial results.

Dr. H. Lee Parker said that five years ago he had made a prolonged study of these cases, trying to find out how many patients with such conditions as brain tumours gave histories of injury. A careful history, not only derived from the patients but also from witnesses, was important, as was also the measurement of the degree of retrograde amnesia and the period of loss of consciousness. A patient who had not been rendered unconscious was not likely to have had a severe injury to the head. He did not know of any definite sign of a subdural haematoma, and he thought the main point in the diagnosis of this condition was the suspicion of its occurrence. The problem regarding post-traumatic epilepsy was its rare occurrence. It had been said that when the dura was torn epilepsy occurred in 18 per cent. of cases, whereas when there was no injury to the dura the proportion was 2 per cent. Other sequels of head injuries were diabetes insipidus, Parkinson's disease, and, occasionally, progressive cortical degeneration, one case of which he had encountered. Regarding brain tumours, endothelioma might occur as a result of injury, but it would probably have no effect whatever in the case of glioma. Dr. H. R. C. Rutherford thought that there was no doubt that head injury could precipitate an attack of insanity. The common mental changes were the inability of the patient to deal with an abstract problem, while his dealings with a concrete problem were quite correct. Mr. T. A. Bouchier-Hayes referred to the advisability of long rest in cases of concussion. He referred to treatment by dehydration, and the performance of encephalography in cases where there was increased intracranial pressure after the injury.

Mr. F. C. Flood reported the case of a patient with mastoid disease who had developed an abscess in the temporal lobe. The patient had died some days after the operation, and subsequent examination had revealed the presence of an old subdural clot. The patient had been fond of diving, and it was suggested that he might have injured his head in this way in the past. In several cases of post-mortem examinations after suicide adhesions had been found between the dura and the brain, and these might have had some significance. Mr. S. T. Irwin mentioned the case of a patient who had had severe concussion, had recovered, and had returned to important mental work. He thought that any surgeon was justified in taking a serious view of the prognosis in such cases if a long period of unconsciousness had occurred.

CORRESPONDENCE

The number of letters received for publication is so large that we must ask correspondents to make their points briefly and to regard 600 words as the upper limit of length.

Hexamine in the Treatment of Biliary Infections

Sir,—We do not wish to enter into the controversy regarding the merits or otherwise of hexamine as a biliary antiseptic. We merely wish to record the following clinical observations.

A typhoid epidemic occurred in Aberdeen in 1935. Thirty-eight cases were admitted to the City Hospital, three of which remained persistent faecal carriers. They were treated unsuccessfully by the administration of yatren by mouth and by enema. Accordingly the patients were given large doses of alkalis and treated with hexamine as follows:

Case 1.—This patient was given 30 grains of hexamine four times daily for three days, followed by 40 grains and then 50 grains with the same frequency and for the same period. As this was ineffective the dose was raised to 100 grains three times a day for fourteen days, with equally unsuccessful results. The gall-bladder was removed ten weeks later. Typhoid bacilli were recovered in pure culture from the contained bile, and the patient at once ceased to be a faecal carrier.

Case 2.—Typhoid bacilli were recovered from the bile in pure culture removed by duodenal tube, and were constantly present in the faeces for many weeks. Accordingly the patient was given 100 grains of hexamine three times a day for five weeks, with no benefit to the carrier condition but with no ill effects to the patient. The gall-bladder was removed ten days later. A profuse growth of *B. typhosus* was obtained from the contained bile, and the carrier condition was immediately relieved.

Case 3.—This patient had a very severe attack of typhoid and eventually became a persistent faecal and urinary carrier. During convalescence the patient was also treated with 100 grains of hexamine three times a day, but after a few days this had to be stopped on account of vomiting. The treatment had no effect on the carrier condition. The gall-bladder was removed two months later. Again *B. typhosus* was recovered from the contained bile. Cholecystectomy, however, failed to eliminate the excretion of typhoid bacilli from the faeces or urine, and the patient eventually died six months later following operation for a calculus pyonephrosis. *B. typhosus* and *B. proteus* were recovered from the kidney.

The clinical data submitted above suggest that sterilization of the biliary tract infected with *B. typhosus* by the use of large doses of hexamine is unlikely to be effective, whereas cholecystectomy offers a reasonable hope of success.—We are, etc.,

L. S. P. Davidson.
J. Smith.
D. Bell.

Department of Medicine, Marischal College, Aberdeen, Oct. 19th.

A Bureau of Geographical Medicine

Sir,—Dr. F. C. Eve (October 24th, p. 840) is to be congratulated on the boldness of the idea for such a bureau ; on its intrinsic soundness ; and on his optimism in throwing out the hint to possible benefactors.

The project cannot be adequately examined in the space for correspondence. But, reasoning from particular instances to the general case, it happens that for several years I have been pressing the second case mentioned by Dr. Eve—the need for investigation of the incidence of cancer in primitive Africans—on anti-cancer organizations. Their replies have been courteous but without practical result, leading one to ponder on past history in regard to new truth. However, I have received from many eminent men letters which form a quite definite contrast (that is, the personal and the official) on this issue, agreeing that this is an investigation which is justified and urgent. Not having permission to quote names, I may say that the writer of the following is very distinguished, and also recognized as a philosopher: "The need for exact knowledge of the geographical distribution of disease is, to my mind, one of the most urgent in medicine." From another: " To-day the pressing need is for someone, practised in a branch of physical science, aware of biological chronicles, and having a philosophical outlook, to correlate the facts, which, by their accumulation, overwhelm us." These views, from a large number of recent date, go to support the soundness of Dr. Eve's proposal.

One point should, I think, be kept very clear from the outset. It is that while such a bureau would co-operate with all other branches of medical science, it should from the very first be financially independent of them, so that the promoters of the new outlook may not be at the mercy of advisers, no doubt entirely sincere, but who nevertheless lean unconsciously towards existing views and interests. The essence of research is that its hands shall be entirely free to follow any course consonant with scientific method that the clues may indicate.

Quite recently I have studied Darwin much and with huge delight. But for that private geographical bureau which Dr. Eve mentions, and whose extent amazes one always, he could not have provided sufficient evidence for the greatest intellectual illumination since Moses accounted for the origin of species. Thus Dr. Eve's idea is not new, but is a development of a very great example ; one, also, which was fortunately financially independent. In my view the suggestion is entirely appropriate, opportune, and likely to lead to benefits to humanity just as much permeating its social and economic aspects as sound health does those aspects of the individual life.—I am, etc.,

W. M. Hewetson, M.B.,
London, W.6, Oct. 25th. D.P.H., D.M.R.

Medical Services in East Africa

Sir,—It will not have escaped the attention of home members of the British Medical Association that its East African branches are very dissatisfied with conditions in Africa north of the Union. You were good enough to publish on September 12th a letter from me giving a summary of some stages of the struggle of the medical profession in Africa during the last four years to persuade the Colonial Office of the necessity of immediate investigation into the causes of native backwardness.

By a happy chance there has been in Kenya for the last few years a remarkable group of medical men which constitutes a valuable nucleus for the inauguration of such a research. This group comprises (1) a director of medical services who has shown himself a very live wire, (2) a London Hospital physician of wide experience, (3) a specialist in mental disease who has made some extremely valuable researches on the native brain, and (4) lastly and perhaps most important of all an exceptionally brilliant and skilled pathologist. Under the auspices of this little group the East African branches of the Association have twice, at combined meetings in January, 1934, and in May, 1936, passed resolutions urging the Government to undertake this investigation, but so far without any effect. Indeed, the latest news from Kenya points to a most unfortunate new development. The medical research laboratory at Nairobi, which has been the centre of this important movement, and which has done work so valuable as to call for special mention in Sir Alan Pim's recent report on Kenya, is finding its staff depleted to such an extent as to seriously handicap performance of its routine work, to say nothing of its research department. The director of the department, Dr. W. H. Kauntze, was promoted to take up the post of director of medical services in Uganda in 1933, and no appointment has been made in his place. His second in command, one of its most brilliant bacteriological workers, Dr. F. P. G. de Smidt, recently broke down in health from overwork, and the laboratory is being run by a very junior man, who has no medically qualified staff to help him. Medical men in Kenya, faced with this state of affairs, are sending their material for laboratory investigations by air mail to Uganda or Tanganyika in preference to relying upon the overworked local department. But the last and most serious blow, which has roused the local profession to an extraordinary degree, is the threatened removal of Dr. F. W. Vint, one of the group of four which I have cited, from Kenya to Mauritius, and it is proposed to replace him by a junior officer who joined the Service only this year. This proposal has caused so much dismay that the profession in Nairobi addressed a petition to the Governor of Kenya to make arrangements for the retention of Dr. Vint in his present post, where he is of such essential importance.

The Nairobi laboratory, besides serving the bacteriological and pathological needs of the profession in Kenya, fulfils a valuable office in training native assistants, and this work also is suffering under the present starvation of the department.

The purpose of this letter is to bring to the notice of the leaders of the Association and to the medical profession in Great Britain the really urgent crisis now developing in the medical service of East Africa, a crisis which the East African branches seem to be wholly unable to deal with, for no attention has as yet been given to their protests.—I am, etc.,

House of Commons, Oct. 22nd. E. Graham-Little.

Substances Promoting Cell Growth

Sir,—The eminence of Dr. W. Cramer as an investigator in the field of cancer research would in any case necessitate a reply on my part to his interesting letter published in your issue of October 17th. But besides commenting upon a misunderstanding which others beside himself may have derived from my paper " Substances Promoting Normal and Abnormal Growth," he also raises a point of fundamental importance for biological cancer theory which demands further elucidation. The misunderstanding may quickly be dissipated.

When I spoke of " substances which give a strong stimulus to the uncontrolled growth of malignant cells " I was, of course, referring to the chemical carcinogens, and I was using " to " in the sense of " towards." The fully explicit sentence would have read " substances which give a strong stimulus to normal cells to begin uncontrolled growth and hence to become malignant."

I confess, however, that I cannot follow the very sharp distinction drawn by Dr. Cramer between normal and malignant cells, nor do I know what evidence he has that "one cell or a small group of cells" in the hyperplastic growth produced by a carcinogenic substance "undergoes a transformation from a normal cell to a malignant cell." I had thought that our only satisfactory criteria of malignancy were rapid rate of growth and metastasizing tendency, and I do not see how these could be assessed by the inspection of one cell or a small group of cells.

More important, however, is the sentence in which Dr. Cramer goes on to speak of the "misconception of a malignant ceil as a normal cell continuously stimulated to uncontrolled growth by carcinogenic agents applied from without" and to say that this is very prevalent. What I have already said may, I hope, convince him that I do not myself entertain this misconception, but if we substitute the words "from within" for "from without" in the above quotation, we have, it seems to me, the germ of a valuable working hypothesis in cancer research. As I have so far nowhere seen this hypothesis in print, and as it might, if pursued, lead to a profound unification of the chemical and serological (virus) researches on cancer, I would like to develop it a little in this communication.

It arose in the first instance from studies in experimental embryology, and from a suggestion made in a discussion on cancer by my friend Mr. C. H. Waddington, that a formal analogy exists between cancer and what is known as "homoiogenetic induction." From the work of Mangold and Spemann (1927) and subsequent writers we know that as soon as the neural plate of the amphibian embryo is induced by the organizing influence of the roof of the archenteron, this neural tissue itself takes on the power of inducing a secondary neural plate if implanted into the blastocoele cavity of another embryo. A whole series of neural plates and tubes could be "propagated" in this way, and from what we know now about the chemical nature of induction, it is sure that the process could be carried on by implantation not of the neural plates themselves but of chemical extracts of them. There seems thus to be a formal analogy between the induction of a neural tube, followed by the homoiogenetic induction of successive neural tubes by cell-free extracts of each other, and the induction of a cancerous growth by tar or a chemical carcinogen and the successive propagation of this cancer by cell-free extracts. That chemically induced cancer *can* be transmitted by cell-free extracts is becoming daily more certain, seeing that the original experiments of McIntosh (1933) have been confirmed and extended by Parsons (1936) (using the interesting water-soluble hydrocarbon 1, 2, 5, 6, dibenzanthracene, 9, 10, endo α, β succinate), and others.

But the analogy may be carried further than this. As may be seen from recent reviews of the problem (Needham, 1936; Waddington, Needham, and Brachet, 1936) it is most plausible to suppose that there exists in the chain of events in organizer phenomena a loose complex between the evocator-hydrocarbon, protein, and perhaps polysaccharide. Hence we may make the suggestion that the active chemical carcinogenic agents are not the hydrocarbons themselves but more or less loose combinations of them with protein. This hypothesis has two valuable attributes to commend it. In the first place it would probably allow for all the immunological and serological phenomena which have led to the postulation of a cancer "virus." Although I wish specifically to disclaim any exhaustive acquaintance with this literature, or even any competency to be a judge of it, I can only frankly say that a perusal of such works as the book of Gye and Purdy (1931) or the lectures of Andrewes (1934) has failed to convince me that it is as yet legitimate to speak of a cancer virus as though it were a living organizm. But of the reality and cogency of the immunological type of evidence there is, on the other hand, no doubt. The suggestion here made is that a hydrocarbon-protein complex would fully account for all the facts which have been discovered in the "light" of the virus theory.

Secondly, the new hypothesis would perhaps account for the curious results which many workers have lately been obtaining with the chemical carcinogens. As detected by ultra-violet absorption spectrography they disappear from fowl muscle a few days after injection (Chalmers, 1934) and from the circulating blood (Peacock, 1936).

"The bulk," says Chalmers, "is transformed or undergoes chemical change." Chalmers and Peacock (1936) find most of the injected amount eliminated, and write, "It is possible that the action of the chemical carcinogens is far more rapid than has been generally assumed, and that essential changes occur in the cell long before malignant multiplication commences. . . . If the carcinogens act as such and over a prolonged time, then the amounts required for carcinogenesis must be very minute, and they must become fixed in some way at the site of injection so as to be protected from the process of elimination."

This is in precise agreement with the view now proposed. The minuteness of the amount probably combining with protein may account for the failure of Berenblum and Kendal (1936) to find more than traces of the hydrocarbons some time after injection when digesting the whole animal with potash and examining benzene extracts spectrographically. Moreover, attachment to protein might render the substances unstable to caustic potash. Finally, in all these experiments it must be remembered that, as Sannié (1935) has shown, the typical spectrum and fluorescence of the hydrocarbons may be quite extinguished in the presence of other substances, including proteins.

In conclusion we must no doubt admit, with Dr. Cramer, that "whatever it is that drives on the malignant cells to their uncontrolled growth resides within the cells." But to admit this is not to admit, as a prevalent misconception would admit, that the chemical carcinogens are now no longer concerned with what is going on. Whatever it is that brings about homoiogenetic induction resides within the cells of the newly evocated neural tube, and in this case we know it to be a chemical substance or substances. Let it be assumed, therefore, that the chemical carcinogen forms in small amounts an active complex with a protein, and that this, passing, under favourable conditions, into cell-free filtrates, gives rise to the serological phenomena on account of which a virus has been evoked. This hypothesis may be subjected to test if close chemical analysis of the virus is undertaken. It may of course be partly misguided, but it cannot be altogether so, since it attempts to unify two realms of research at present widely separated, and hence obeys the immortal principle of William of Ockham.—I am, etc.,

JOSEPH NEEDHAM.

Biochemical Laboratory, Cambridge, Oct. 21st.

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Hallux Valgus and Rigidus

Sir,—Mr. W. J. Eastwood (October 17th, p. 784) is mistaken. I do appreciate hemiphalangectomy. I was introduced to it by Sir Robert Jones and Mr. McMurray at cockcrow one morning in Liverpool. Receiving it from the best possible authority I used it with confidence and a careful choice of case for ten or more years. It gave good results—indeed, the best results that I had hitherto been able to obtain ; but where metatarsalgia had previously been present it offered no relief, and in some cases, previously free, metatarsalgia subsequently developed. For these reasons I tried to devise an operation which would set the joint free in a similar way, but with the virtue of helping rather than the vice of diminishing the intermetatarsal control. I worked out the new operation in December, 1934, and we for convenience termed it the " 1935 model," but I am perfectly ready to sponsor it.

I am sorry I gave Mr. Eastwood the impression that I " stretched " the adductor structures. I put them into tension exactly as a transplanted tendon is sutured under tension. The after-treatment gives them protection until they are capable of carrying on.

I hope Mr. Eastwood will await a full description of the operation (to appear shortly in the *Journal of Bone and Joint Surgery*), and not condemn it without giving it a fair hearing, or, better, a fair trial.—I am, etc.,

Oxford, Oct. 23rd. G. R. Girdlestone.

Plastic Operations for Hydronephrosis

Sir,—Sir John Thomson-Walker reproves me for basing my article upon foreign literature instead of British textbooks. Nearly everything that has been written upon the reduction of hydronephrotic sacs in British textbooks comes from Sir John's own accomplished pen. The theme of my article was that at the present time major plastic procedures are very rarely employed in Britain, and when I did the work upon this subject the 1913 edition of Sir John's well-known *Genito-Urinary Surgery* alone was available. It was this fact, and other careful inquiries, that compelled me to refer to the work of those foreign surgeons who were perfecting the technique of these conservative measures.

A striking testimony to the truth of my theme was that at a well-attended meeting of the Urological Section of the Royal Society of Medicine last year, where I showed some cases, the only other surgeon present who had embarked on these operations was the president, Mr. Ogier Ward.—I am, etc.,

London, W.1, Oct. 25th. Hamilton Bailey.

Treatment of Spondylolisthesis

Sir,—A paper on " Spondylolisthesis: With a Description of a New Method of Operative Treatment and Notes of Ten Cases," by Mr. Walter Mercer, has appeared in a recent number of the *Edinburgh Medical Journal* (1936, xliii, 545). In this letter I am concerned only with the new operation that he has described.

In brief, it consists in placing blocks of bone (taken from the ilium) into a broad slot cut in the L5 – S1 disk and the adjoining vertebral surfaces—a most attractive operation. It is, however, a little disappointing to find that of the cases operated on only two were dealt with by this method. The illustrations depict the operation as performed at the usual level—that is, L5 – S1. Mr. Mercer tells us that he has never actually done this: in his two cases the luxation was between L4 and L5. (In the case notes it is stated that in these two cases, 9 and 10, the *x*-ray film showed displacement of the fourth lumbar body on the sacrum—a serious misprint.) The author *assumes* that his operation could be performed with equal ease at the usual level, though surely it would be almost impossible if the forward luxation of L5 were at all marked.

Mr. Mercer advises the use of two blocks of bone from the ilium, which are to be " screwed into place to ensure their retention. If they are not screwed in it has been found that when the patient is lifted off the table the lumbo-sacral angle may be opened up and the wedges of bone spring out." How does Mr. Mercer know this, seeing that he has not yet operated at the lumbo-sacral joint? If a comparable accident happened in one of his L4 – L5 cases, why is there no mention of it in the notes? If it happened in a case operated on by a colleague, this should have been mentioned.

Here is a new, and perhaps valuable, operation ; but no dates are given in the case notes and no pre-operative or post-operative *x*-ray films shown. It is a pity, too, that one patient died, " and for this the trauma of the operation must be blamed "—a high mortality rate in an operation for such a benign condition.

If this operation had been described only in a medical journal these criticisms would not have been made public. But it appears in the new second edition of Mr. Mercer's textbook, with no indication of the insecurity of the foundations of the operation—not even a reference to the full paper to be published subsequently. This is a serious lapse in a textbook that is now well known and should stand above all else for sound teaching. Surely one is entitled to expect a little less of the fond parent in the author of such a work.—I am, etc.,

Stanmore, Middlesex, Oct. 21st. H. J. Seddon.

Care of the Sea-sick

Sir,—One admits that any active bits of machinery are doing something in the machine, but on reading Dr. John Hill's paper on sea-sickness, in the *Journal* of October 24th, one is struck by the unimportance singly of all but visceral sensations. Optical illusions of rise and fall can be corrected by the horizon ; *mal de mer* is not a vertigo severe enough to cause vomiting ; novel muscle sense experience but alters our stride along the deck. The essential sensations that distress are the feelings of undue abdominal lift and of vanishing abdominal support.

The nerve energies aroused, which culminate in sea-sickness, can be augmented to that point mainly by emotion or mainly by direct sense impressions, or equally by both combined. In an established case of *mal de mer* we can also conceive of equally raised vagus and sympathetic activity, or of unequal activity of these on a partnership basis of the more of one the less of the other.

Examining what the patient does, one finds that the most obvious and most neglected prodromal symptom is a natural holding-in of the abdominal wall and diaphragm against the lurch of the ship. The most important preventive step for the traveller to take is to learn to cease this emotional and irrational self-guarding. His abdominal contents won't fall out. Within fairly wide limits of weather this trick is sufficient alone to prevent sea-sickness. The dog conditioned to salivate at the sound of the bell soon ceases to do so if food never arrives, and the " sea-dog " will tend to cease to " bring up " his food, in part because the apparent risk to his anatomy continues never to materialize. Relaxation might not prevent simple regurgitation, say, while leaning over a wash-basin during a lurch of the ship, but nausea and malaise are absent.

A single lesson in relaxation before sailing will produce the desired result. Augmentation of undesirable neurone energy is cut down in two ways: the relaxation of abdominal roof and wall minimizes sense impressions from, and circulatory disturbance in, the abdomen, and anxiety is diminished by the increased intellectual discrimination and by the sense of power to use a credible and provable means of diminishing discomfort. The same prescription applies to the discomfort of foetal kicks in late pregnancy, to vomiting in the first stage of labour, and to car-sickness. —I am, etc.,

Ilford, Oct. 25th. W. Thomson Brown, M.B., Ch.B.

Avitaminosis

Sir,—We note that Dr. E. J. Wright, in an article in the *Journal* of October 10th (p. 707), states that " no note of a vitamin A concentrate being used " was made in the paper by us to which he refers. That is so, but in point of fact we treated seven cases in the stage of subacute combined degeneration of the cord, three of which also showed the epithelial lesions of the early stages of the disease, with 2 oz. of cod-liver oil daily for seventeen days followed by injections of 2 c.cm. of radiostoleum daily for a further week. There was no appreciable improvement in any of the signs or symptoms, epithelial or other. Radiostoleum was the vitamin A concentrate recommended by Dr. Wright in a previous paper.

Dr. Wright also states that we made no allowance in a certain experiment for storage of vitamin A in the body. If he will refer again to our paper he will see we found that a sample sixty of the cases of the epithelial disease became quite well on the addition of marmite and of no special source of vitamin A to the diet, so we saw no reason for theorizing about the storage of vitamin A in the body.

We have little doubt, however, that Dr. Wright is often dealing in Sierra Leone with a " polyavitaminosis " ; nor have we disputed this.—We are, etc.,

J. V. Landor.
R. A. Pallister.

London, S.W., Oct. 19th.

Blood Groups and Paternity

Sir,—As the one who carried out the blood-grouping tests in the case of disputed paternity referred to by Dr. John C. Thomas in the *Journal* of October 24th (p. 844), I am glad to have the opportunity of publicly expressing my disappointment at the fact that the requisite sera for testing for M and N types are not readily obtainable in London. When I found that both mother and child in the case in question belonged to group A, while the putative father belonged to group O, I decided to test for the M and N factors. I discovered that the only laboratory in London that had fresh sera for these tests was the Galton Laboratory at University College, but they refused to part with them for medico-legal purposes. I was referred by that laboratory to the pathological laboratory of St. Mary's Hospital, but I was informed by the latter that they had no fresh sera in stock, and that it would take some days to get such sera. As the appeal at the Hertfordshire Quarter Session was about to be heard before such sera would be ready the test had perforce to be abandoned.

Perhaps this letter would stimulate some of the more important laboratories to keep these sera in stock.—I am, etc.,

London, W.1, Oct. 26th. W. M. Feldman.

Typhoid Fever Carriers

Sir,—Dr. W. G. Aitchison-Robertson (*British Medical Journal*, October 10th, p. 739) mentions the disgust of " some of our Eastern friends " at the " filthy habits of our people " who do not wash hands or anus after a visit to stool. In a paper in a health journal ten years ago I wrote:

" One lesson we might learn from the Indians: they are surprised at the lack of cleanliness among Europeans, who use nothing but dry paper to cleanse themselves after a visit to stool. Many years ago (in 1900) an Indian doctor told me this, and since that time I have always provided myself with a piece of well-wetted paper for use on these occasions. I strongly recommend this simple reform."

A few days after the appearance of this article a visitor called to show me a rough paper-wetter he had devised for use in w.c.'s. Together we worked out the details, and we evolved a simple and practical device to be fixed to the wall and to take the standard toilet roll. The paper is drawn over a roller that wets it (except the edges). If a dry piece is desired the paper is raised so that it escapes contact with the roller.

The inventor interviewed a number of firms that should have been interested—stores, makers of toilet rolls, etc.—but he was unable to induce any firm to take it up. Since that time (1927) I have had this paper-wetter in use ; I should be sorry to be without it, but I am bound to admit that it has aroused practically no interest ; persons using the w.c.'s in which it is installed seem to avoid using it as a paper-wetter ; they prefer dry paper! The most hopeful way of introducing cleanly habits would be to teach young children, but any special apparatus would probably prove unsuitable for schools because the children would be sure to " play monkey tricks " with it. I am, however, strongly in favour of an educational drive, and I suggest it might be introduced as a part of the newly announced movement for physical training. —I am, etc.,

London, W.1, Oct. 20th. A. C. Jordan.

Sanatorium Treatment in England

Sir,—Dr. Gurney Champion's letter (October 10th, p. 740) was doubtless intended to correct a mistake, and to call attention to the services of Dr. Jane Walker, without any intention of belittling the good work of Dr. Bardswell, who already had a distinguished sanatorium record when appointed at Midhurst.

Although originally a British notion, first advocated (1747) in Scotland (Bulstrode, Report of the Medical Officer to the Local Government Board, 1908, p. 119), and first carried out by Bodington near Birmingham soon after 1840, the modern inspiration for sanatorium treatment came from Dr. Otto Walther of Nordrach Colonie, and from the rival school of Brehmer and Dettweiler. Dr. Jane Walker and Dr. F. W. Burton-Fanning deserve credit for their experimental sanatoria at Downham Market in 1892 and at Cromer in 1895 respectively, of which the former has resulted in the East Anglian Sanatorium with its satellites, the latter in the Mundesley and Kelling sanatoria.

Most of the sanatoria for the middle classes were more or less founded after Walther's ideas. He had far less to do with the " working class " sanatoria, as he did not believe in cure from a few months' sanatorium treatment. Several of the early British sanatoria for the middle classes were founded by his patients or assistants, including Nordrach upon Mendip (Dr. Thurnam, 1899), Linford (Drs. Mander Smyth and Felkin, 1899, *not* 1897), Pendyffryn Hall (Dr. Morton Wilson, 1900), the Vale of Clwyd Sanatorium (Drs. Crace-Calvert and Fish, 1901),

and Altadore Sanatorium, co. Wicklow (Dr. J. C. Smyth, 1901); though the Cotswold Sanatorium (Drs. Pruen and Braine Hartnell, 1898), the Mundesley (1899), Banchory (Dr. Lawson, 1900), the East Anglian (1901), the London Open-Air Sanatorium at Wokingham (1901, originally for the middle classes), the Ochil Hills Sanatorium (1902), and the King Edward VII Sanatorium (1905) were notable exceptions.

Many small private sanatoria of this kind were opened in this country between 1898 and 1905: amongst others, Woodburn (1899), Rostrevor (co. Down, 1899), Whitmead (1899), Crooksbury Sanatorium (1900), Hailey (1900), Kingwood (1900), Rudgwick (1900), Alderney Manor (1900), Mendip Hills (1900), and the Grampian Sanatorium (1901).

When the Midhurst Sanatorium was opened in 1905 there must have been between 500 and 600 beds in sanatoria of this kind in this country, though some were expensive and others not quite first-class. The King's Sanatorium was opened in order to help the less wealthy middle classes, and in this respect has done valuable service, though partly at the expense of smaller institutions with smaller resources.

Though this is fortunately not an obituary notice, it may be permissible to call attention to the useful influence exerted by Dr. Jane Walker, not only in founding sanatoria, training centres, and workshops for convalescents in connexion with her own group of sanatoria, but more widely throughout the country; in improving the clinical work and status of sanatorium medical officers, the medical education of women, occupation therapy, and in other ways. Her claims have received some public recognition, and will doubtless be still further recognized. —I am, etc.,

Farnham, Oct. 21st. F. R. Walters.

Treatment of Tetanus

Sir,—In reply to Mr. Duncan Fitzwilliams, and also to Dr. Clayton-Mitchell, there is no doubt that much can be said for methods of tetanus treatment other than by antitoxin. However, Dr. Leslie Cole has shown in a fairly large series of cases of varying severity that intravenous antitoxin in massive doses, combined with control of the convulsions, has given excellent results. There can be few practitioners faced with a case of tetanus who, having serum to hand, would fail to use it; and if it is to be used it is only rational to employ that method which has been shown to give the best results.—I am, etc.,

London, N.W.10, Oct. 24th. Henry Canwarden.

Sir,—In reference to the recent correspondence on the treatment of tetanus, a few notes on Dufour's method may be of interest. It is claimed for this technique that it will cure well-established cases. It is based upon the following experiments:

1. If cerebral substance be crushed up with tetanus toxin, and the mixture be centrifugalized, animals may be injected with the supernatant fluid without developing tetanus, for the toxin has been absorbed by the nervous tissue (Wassermann and Takaki).

2. If chloroform or ether be added to the mixture the supernatant fluid will cause tetanus, the toxin having been displaced by the anaesthetic.

3. If the chloroform be allowed to evaporate the toxin will be reabsorbed by the nervous tissue and tetanus will not occur. "This can be explained by admitting that the affinity of the anaesthetic for the nervous tissue is greater than that of the toxin, so that the latter is displaced and can be acted on by antitoxin."[1]

Dufour's method consists in giving a general anaesthetic, preferably chloroform or ether, to displace the toxin from the nerve cells; at the same time antitoxin should be administered so as to prevent the liberated toxin from being absorbed. Antitoxin can be administered by any of the parenteral routes, although the intravenous drip is often preferred as being more active and less toxic.[1,2,3] The anaesthetic is usually given for half an hour twice a day; two or three administrations may be sufficient. Recoveries have been reported, including one in which the trismus appeared after an incubation period of only one day.[1]—I am, etc.,

Edinburgh, Oct. 18th. C. T. Barry.

References

[1] Achard, Ch.: *Bulletin Médical*, May 12th, 1934, p. 291. (Numerous references.)
[2] Lehmann, R.: *Monde Médical*, November 1st, 1933, p. 893.
[3] Hardouin, P.: *Concours Médical*, March 29th, 1936, p. 967.
See also Cruchet: *British Medical Journal*, 1932, i, 85.

Tuberculous Cervical Glands

Sir,—In the discussion about tuberculous cervical glands I note that none of your contributors have suggested the specific remedy—tuberculin. I have seen a mass of glands the size of a tangerine orange disappear after tuberculin treatment. I have seen a sinus which had been running for two years after aspiration of a caseating gland closed permanently within six weeks after injections of tuberculin T.R. When caseation has occurred in a gland it should be removed by a surgeon, but even if the surgeon has removed a chain of glands a course of tuberculin should be given, because the finest scalpel cannot remove all tubercle bacilli from the lymphatic chain.

When I was in practice with the late surgeons W. A. Mackay and Ian MacDonald of Huelva, Spain, we treated tuberculous cervical glands with tuberculin. One of two things happened. Either the swelling disappeared or the gland caseated. They told me that they found it easier to dissect out a caseating gland after tuberculin treatment than if tuberculin had not been administered. I have seen cases of pulmonary tuberculosis in adults where a tuberculous gland in the neck had been removed during childhood.—I am, etc.,

London, W.8, Oct. 23rd. Halliday Sutherland.

Sir,—Mr. Denis Browne, in your issue of October 24th, makes two rather sweeping assertions: one that calcification is always the final stage in the healing of tuberculous glands, and another that when healing takes place without calcification the original lesion was not tuberculous.

I am afraid that neither contention can be accepted absolutely. Although radiographic evidence often shows healing by calcification, it frequently shows cases where there is no calcification even where several years have elapsed since the last treatment. It is in the latter cases that Mr. Browne suggests that the original diagnosis was mistaken, and they were probably cases of simple septic adenitis. As a pathological examination is not made in every case before irradiation, it is impossible to deny that some of the cases where there was complete and rapid disappearance of the glands were not of this type. Such cases, however, are very few, and they can usually be distinguished after, if not before, treatment, because they disappear within a few days or weeks after irradiation, whereas tuberculous glands usually take several weeks or months to resolve. Moreover, the diagnosis of tuberculosis has sometimes been established by pathological examination before the commencement of treatment. The response of tuberculous glands to irradiation

depends to a great extent upon their type. They may be classified into four groups: hyperplastic, fibrous, caseous, and any combination of these three; and in general it will be found the first type will disappear, the second will become smaller and fibrose, and the third will usually calcify. It is interesting to note that in the fourth type healing may take place in all of the above ways. Further evidence of the methods of healing in tuberculous processes is provided by serial radiography in pulmonary tuberculosis, where it is seen that healing takes place not only by fibrosis and calcification, but also by apparently complete absorption of the infiltrative lesion; and one occasionally comes across cases where after healing it is impossible to detect the original site of the disease.

Mr. G. W. Thomas joins forces with those surgeons who advocate radical excision, although he admits that the operation is not free from risk, especially in young children. Without in any way wishing to be discourteous, I would like to suggest that he would be doing far more good by furthering the campaign for a pure milk supply than by devising bigger and better operations for the removal of tuberculous glands.—I am, etc.,

London, W.1, Oct. 24th. F. G. Nicholas.

Small-pox in London

Sir,—May I refer to the leading article in the *Journal* of October 24th in order to comment on two statements there which may convey an erroneous impression of my views to some who have not read the report which is under review?

The article states: "The author accepts without question the teaching of Ricketts that the mild form of small-pox should be regarded as 'modified' in contradistinction to the 'natural' or 'unmodified' grave form." If by "grave form" reference to variola major is intended, no such distinction can be drawn, for, although cases of variola minor are *invariably* modified, because of degradation of strain of causative organism, cases of variola major may be either modified or unmodified (natural) in accordance with the degree of immunity (natural or acquired) possessed by the patient. And I do not hold that "the only constant feature differentiating the rash [of variola minor] from that of variola major was the accelerated rate at which the individual lesions passed through the different stages," for it is my experience that the lesions in modified cases of variola major may not differ in this, or any other, particular from those of variola minor.—I am, etc.,

Dartford, Oct. 24th. J. Pickford Marsden.

National Maternity Service

Sir,—In reply to Sir Henry Brackenbury's criticisms in the *Journal* of September 19th (p. 606) of my letter on a National Maternity Service I should like him to understand that it was written with only one object—to give a sincere opinion on some of the shortcomings of the B.M.A. scheme.

He describes my picture of a forceps delivery as a "curious case." Admitted that perhaps not every one of the difficulties and disadvantages described occurs in every single instance, but taken as a whole I still believe it a reasonable picture of the average case delivered under the conditions mentioned. The crux of the whole matter is, as Sir Henry Brackenbury says, this: Are the occurrences described inevitable and usual or are they only isolated instances of unfortunate happenings under bad conditions?

I have circularized all the national health insurance practitioners of Leicester, 113 in number. My letter was printed in full, and they were asked if they considered it a fair and reasonable description of a forceps delivery under the conditions mentioned. If they thought it completely untrue of the average case or exaggerated in any way they were asked to indicate in what way they disapproved. Of the sixty-four who replied, thirty-seven gave an unqualified or emphatic "Yes"; twenty-four thought the letter exaggerated, or that the difficulties mentioned rarely occurred all together, or that the letter gave an entirely untrue picture of the average forceps case. Three stated they did not conduct a forceps delivery without an anaesthetist and were non-committal. Thus 60 per cent. agree with no reservations and 40 per cent. disagree. The majority of those who disagree apparently do so because they obtain a colleague to give the anaesthetic and make himself useful. Others use a different technique, and hence disagree with my description. Several admit that the difficulties occur sometimes, but not as a rule. If I have shown that a considerable body of representative medical men are still conducting confinements under those conditions and having to use every ingenuity and artifice to combat the disadvantages present, I may have succeeded in awakening a doubt in the minds of Sir Henry Brackenbury and others as to whether their criticisms were fully justified.

My letter was a plea not for universal hospitalization of cases, but for a wider extension of hospital facilities with all the advantages that hospitals and hospital technique confer; it was also a plea on humanitarian grounds. To take one aspect of this alone. In one of the Leicester maternity hospitals there were 904 admissions last year, and 89 per cent. of them had a combination of drugs administered for the relief of pain and 47 per cent. in addition had prolonged administration of N_2O by the Minnitt apparatus. This percentage is nothing like as high as in some other hospitals. All these patients would come within the scope of a national maternity service, and under the B.M.A. domiciliary scheme most would have been attended by midwives only, with perhaps a single dose of bromide and chloral, or with no relief at all. A modern midwifery service is incomplete unless it pays due regard to this side of the question. It is only in a large hospital that one realizes the mass suffering of women in labour.

With regard to the provision in the B.M.A. scheme of a second practitioner to give an anaesthetic when necessary—in the case of partnerships this provision seems to present little difficulty. But I think there arises real difficulty among the large number of single practitioners. It is a commonplace that between the hours of 11 a.m. and lunch even a large town might be searched unsuccessfully for a doctor. If the call comes during surgery hours must the practitioner leave his patients or rush through them, or must he keep the other doctor waiting till he finishes? A national scheme which is supposed to be the very last word should be able to avoid this. In conclusion, I would ask Dr. Walsh, and anyone else interested, to read Dr. Leonard Colebrook's letter in the *British Medical Journal* of June 20th, and also his article in the *Journal of Obstetrics and Gynaecology of the British Empire*, August, 1936.—I am, etc.,

Leicester, Oct. 20th. C. L. Somerville.

Complete Repair of "Mallet Finger"

Sir,—The note by Mr. Basil Merriman (October 17th, p. 760) is very interesting. For many years the treatment he describes has been routine in my practice, and has been as successful as in his own case. I agree that a poor result in such a case may be due to lack of co-operation on the part of the patient. It may also be due to lack of persistence on the part of the surgeon.

If the method is now more widely applied there will be less tendency for unnecessary and harmful operations to be performed. (It is not as if there were really a separate tendon at this point.) It will also be possible

for Mr. Merriman to revise his surprising statement at the beginning of his note that " the prognosis here is by no means good ; complete return of function but rarely occurs, the tendon usually uniting in an overlengthened condition "!—I am, etc.,

Liverpool, Oct. 20th. B. L. McFarland.

Prescribing of Glucose

Sir,—It is encouraging to read the letter of Dr. T. W. Preston upon the prescribing of glucose (October 17th, p. 787). Whereas this substance is of value for the speedy restoration of the liver glycogen, particularly in cases of sick stomachs, it does appear to be prescribed as a panacea for the ailments of adolescents. Every term brings children with doctors' or parents' letters demanding that glucose should be given for postural scoliosis, flat feet, night terrors, enuresis, and general naughtiness. The adolescent will take as much sugar as can be given, but one was always taught that sugars predisposed to dental caries, and supposes that glucose barley-sugar has received special dispensation from Harley Street.—I am, etc.,

Sherborne, Oct. 19th. J. Whittingdale.

Health Time-table for a Great-grandson

Sir,—I was born a long time ago. Soon after that I was vaccinated against the small-pox. I was a weakly child, subject to bronchitis, and grew up a weakly, weedy youth, but no further attempts were made by inoculations of any sort to alter my make-up. My son was a sturdy chap ; he had nothing done to him beyond the vaccination. I have a grandson ; he is getting a big boy ; he was vaccinated, and had some surgical help too—not much. But I rather fear for my great-grandson —if any. We progress. Much is done in the way of prevention nowadays, and sometimes we improve on Nature's make-up.

Looking forward to the generation of my great-grandson I project a health time-table for him. Soon after birth I think he should be circumcised. Moses was right about that. In modern life we do not need the protection of a prepuce. At 4 months he should be vaccinated. At school age, say about 7, I suppose he ought to undergo a Schick inoculation. Puberty, say about 13 or 14, will be a ticklish time for the young fellow. They ought to be sure that the tunica vaginalis is sealed up, and while they are about it the inguinal rings at least should be sewn up. Fierce athletic life is imminent, and why run the risk of hernia?

Adolescence is a time of some risk. I have often seen tuberculosis manifest itself about this period. It would be well to make some tests of the response to tuberculin injections. About 20 he might be going to a university. The old-established ones are in the South Midlands, seated by the side of rather sluggish rivers in flat country. Common sense will approve inoculations against typhoid and paratyphoid. After concluding his time of residence, and before any professional training begins, it will be well to remove the appendix vermiformis. There is ample evidence that people can do well without that survival, and why run risks? Why wait for trouble to show itself, probably at a most inconvenient time? Early and later manhood, we may hope, will be a period of well-protected health. The decade between 40 and 50 must be carefully watched. Perhaps baldness will show itself ; the routine of business or professional life may disclose a certain dullness, a loss of enthusiasm, a failure to respond to emotional appeal. This may be countered by some thyroid reinforcement. Between 50 and 60 the wonderful results obtained by Voronoff must be considered. It may be incumbent on him, in the interests of his family, to undergo a special course of biological treatment. At about 65 the bugbear of enlarged prostate looms up. There are various drugs which are recommended for subdermal injection ; and I understand that good results have followed ligature of the vas deferens.

Poor young chap—if he happens. If he emerges, it will be into a world full of risks and responsibilities and preventions, and psychical investigations, and political slogans, and other worries that the care-free youth of previous generations never experienced.—I am, etc.,

Bournemouth, Oct. 18th. George Mahomed.

The Factories Bill Campaign

Sir,—Lord De La Warr, speaking for the Government in the debate on the Education Bill on June 30th of this year, said: " We are pledged to introduce a Factory Bill next year." The measure is long overdue, since the last consolidating and amending Act was passed in 1901. Successive Governments have introduced comprehensive Bills, but these have failed to reach the Statute Book.

The Government's promise has led to the launching of the Factories Bill Campaign with the object of securing that the Bill shall be adequate to meet the needs of to-day. If the standards of health, welfare, and safety in factories and workshops are to be raised, legislative provisions are essential. Hours for women and young people should be drastically limited. Overtime for women should be allowed only when indispensable, and for young persons it should be abolished. Even at present it is unreasonable for industry to require the services of juveniles for more than forty hours a week. The Archbishop of York has sent the following message to the Campaign: " The pace of modern industry makes a new need for the protection of industrial workers from excessive strain and risk. If we are to be worthy of our fathers we must secure this now, especially for young people."

The idea behind the Campaign is to give a means of expression to the smaller organizations and to individuals whose opinion might otherwise pass unheard. May we claim the hospitality of your columns to invite correspondence from all associations and individuals to whom this great problem is of vital interest? The honorary secretary is Miss Rosamond Tweedy, 32, Primrose Hill Road, London, N.W.8.—We are, etc.,

Margaret Bondfield. R. H. Tawney.
Wyndham Deedes. Gertrude Tuckwell.
J. Scott Lidgett. Anne Ware.
Listowel. Helen Waddell.
Squire Sprigge.

October 26th.

Universities and Colleges

UNIVERSITY OF LONDON

At a meeting of the Senate held on October 21st, for the first time in the new buildings in Bloomsbury, with the Vice-Chancellor, Mr. H. L. Eason, in the chair, Dr. Charles Reid was appointed to the University Readership in Physiology, tenable at London Hospital Medical College, from January 1st, 1937. The Rogers Prize was awarded to Robert Parkin Kemp, M.D.

UNIVERSITY OF GLASGOW

A ceremony of graduation was held on October 24th, when the following degrees were conferred:

M.D.—R. S. Dewar, J. Mackay.

M.B., Ch.B.—*A. J. S. McFadzean, *C. W. Mackay, *L. J. Radin, *G. J. Aitken, *J. D. Aitchison, *K. S. Alstad, *W. F. Anderson, *Elizabeth A. Marshall, *T. Fletcher, *J. Harkness, *W. K. Stewart, *A. Slessor, *A. McPhater, *J. McInroy, *G. Boyd, *Elizabeth M. Thomson, *J. D. Fraser, *G. L. Brown, *J. W. Ferguson, †Agnes M. Highet, †J. K. T. Cherry, †I. M. Scott, †W. H. Findlay, †N. Botwin, †H. Doyle, †Bedelia C. Gallen, †A. M. Giles, †I. M. Macgregor, †Janet F. Cormick, †J. J. Jacobson, †R. D. McD. Morrison, †G. Goodkin, †Agnes M. Stewart, †I. Ginsberg, †I. B. McMillan, †A. S. Scott, †T. C. Frame, †D. T. Aitken, †I. McK. Burns, †J. Joseph, †A. T. Aylmer, †A. Walker, †J. Clark, †J. K. Hunter, †J. T. Boyd, †D. Dickie, †J. H. McWilliam, †A. Burns, †W. G. Macfie, †J. Crawford, †M. M.

Garrey, †F. R. Badenoch, †J. L. Farmer, †J. E. Jarrett, †G. M. Arnott, †J. G. Denholm. J. M. Aitken, J. T. Aitken, J. Angus, J. W. Ashforth, B. G. Bowles, J. Clark, G. H. Collins, W. Davidson, F. W. Dickson, C. G. M. Donaldson, J. C. Easson, J. B. Faison, W. Fowler, T. M. Gibson, W. G. C. Gillies, Mairidh A. M. N. Graham, W. G. Graham, M. Grais, F. P. Haldane, Elizabeth S. Hamilton, J. Hamilton, P. Kelly, F. C. Kennie, R. P. Lawrie, J. H. Lawson, T. McEwan, A. M. Macfie, J. McGhie, T. McHugh, Jean E. MacLachlan, H. C. McLaren, H. I. C. Maclean, R. C. Macleod, G. B. Mair, T. M. Mansbridge, D. Martyn, R. M. Munro, W. H. L. Patrick, Jessie McA. Pope, J. T. W. Reid, D. Rosenberg, G. T. Ross, K. Sandbank, Margaret D. L. Service, M. Silver, T. F. Stewart, W. C. Swanson, Jessie M. R. Tytler, D. F. Wood.

* With honours. † With commendation.

Alexander J. S. McFadzean gained the Brunton Memorial Prize awarded to the most distinguished graduate in medicine for the year 1936, and the West of Scotland R.A.M.C. Memorial Prize, awarded to the candidate with the highest aggregate marks in surgery, medicine, and midwifery in the final M.B., Ch.B. examinations held during 1936.

The Macewen Medal in Surgery was awarded to Archibald McPhater as the candidate who obtained the highest aggregate marks in surgery in the final M.B., Ch.B. examinations held during 1936.

UNIVERSITY OF WALES

The following candidates have satisfied the examiners in the examination indicated:

Diploma in Public Health.—*Part II:* Violet L. de A. Hickson, D. J. N. McNab, J. B. S. Morgan, W. E. Thomas, J. T. Watkins.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

After the delivery on October 19th of the Harveian Oration by Sir Walter Langdon-Brown (see *Journal*, October 24th, p. 793), the President, Lord Dawson of Penn, presented the Weber-Parkes Prize to Sir StClair Thomson, M.D., F.R.C.P., F.R.C.S., for his valuable work on tuberculosis of the larynx, carried out over a long period of years; and the Moxon gold medal to Dr. Edward Mellanby, F.R.S., F.R.C.P., secretary of the Medical Research Council, and emeritus professor of pharmacology, University of Sheffield.

The Weber-Parkes prize of 150 guineas and a silver medal is awarded every third year for the best work already done, whether in this country or abroad, upon some subject connected with the aetiology, pathology, or treatment of tuberculosis. Sir StClair Thomson, who was a house-surgeon to Lord Lister, is emeritus professor of laryngology and consulting physician for diseases of the throat, King's College Hospital, and laryngologist to King Edward VII Sanatorium. The Moxon gold medal is awarded every third year to the person who is deemed to have most distinguished himself by observation and research in clinical medicine; it is not restricted to British subjects. This is the second medal awarded by the Royal College of Physicians to Dr. Edward Mellanby, the first being the Bisset-Hawkins medal in 1929 for work in advancing sanitary science and promoting public health.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The annual meeting of Fellows and Members will be held at the College in Lincoln's Inn Fields on Thursday, November 19th, at 4 p.m., when a report from the Council will be laid before the meeting. Fellows and Members can obtain copies of the report on application to the secretary, and have their names placed on the list of those to whom it is sent annually. Motions to be brought forward at the meeting must be signed by the mover, or by the mover and other Fellows and Members, and must reach the secretary not later than November 9th.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the Royal College of Surgeons of Edinburgh held on October 20th, with Mr. Henry Wade, President, in the chair, the following successful candidates were admitted Fellows:

A. S. Beer, K. F. Caird, C. W. Clark, A. J. de Villiers, K. Girgis, W. I. Gordon, I. H. Hewetson, R. A. Hill, R. St. J. Honner, R. Howarth, C. H. Howat, S. Klein, D. Malloch, S. D. Meares, N. H. Munday, D. G. Myatt, D. A. MacLennan, C. R. McLaughlin, V. T. Powell, M. Rassin, C. V. Salisbury, G. D. Saxton, F. A. B. Sheppard, R. H. Smith, R. Stuppel, G. L. Talwar, G. W. Watson.

At the annual meeting of the College held on October 21st the following officers were elected for the ensuing year: *President*, Mr. Henry Wade; *Vice-President*, Dr. A. H. H. Sinclair; *Secretary and Treasurer*, Mr. J. W. Struthers; *Representative on the General Medical Council*, Mr. Alex. Miles; *Convener of Museum Committee*, Dr. A. Logan Turner; *Librarian*, Dr. H. M. Traquair.

THE EAR, THE NOSE, AND THE THROAT

SIR StCLAIR THOMSON'S RETROSPECT

An enlarged theatre for the ear, nose, and throat department was opened at King's College Hospital on October 27th. Before Lord Hambleden, chairman of the hospital, handed it over to the department a brief address, mainly historical in character, was given by Sir StClair Thomson. As a teaching centre in oto-rhino-laryngology, he said, "King's" had a proud position, but his recollection went back to the time when the provision for these conditions in the hospital was very primitive.

The Dark Ages

In the history of medicine the study of the ear had preceded the study of the throat and the nose, possibly because the ear was the easiest region to inspect, and the chief symptom of ear disease, deafness, the most obtrusive. But even down to our own time the advance of otology was so slow that it gave rise to the gibe that diseases of the ear could be divided into two groups: "those which could be cured by squirting up it, and those which could not." Laryngology went back to the beginning of history, but its rapid and remarkable advance dated only from the invention of the laryngoscope in the middle of the last century. The nose was the Cinderella of the three sisters; although its exterior was the most prominent feature of the face, its interior was neglected as there were no means of exploring its recesses, and its most important function, that of warming and filtering the air, was not understood. When he entered the medical school as a student both nose and throat were neglected, though for the ear there was a whole-time surgeon. The cases which had any blockage or trouble in the nose or throat were collected once a week by one of the assistant physicians or surgeons and examined in a little room not much larger than an omnibus. When he gained his degree he had never seen the vocal cords or the drum of the ear in a living person. At that time the most prominent parts of enlarged tonsils were snipped off with the guillotine, and polypi of the nose were pulled out by a blindly inserted forceps. Adenoids were discovered about 1868 or 1870, although Hippocrates very nearly detected them, remarking that when people walked about with their mouths open and with running ears and a hard palate like the inside of a saddle they frequently had some growth at the back of the nose. In his own early days one child in every five went about with cotton-wool in his ears and with an open mouth due to adenoids. When it became necessary to operate for adenoids in the out-patient department the struggling child was held by the porter, while the surgeon, whose only instrument was his finger-nail, inserted his finger up behind the palate and scratched out as much of the adenoids as the yelling child would permit. The next stage of progress was the invention of an artificial finger-nail, which Sir StClair passed round among his audience.

From 1896 to 1936

Passing over twenty years, he came to 1896, in which year the number of throat patients at "King's" was 334 and of ear patients 531. The number of tonsils and adenoids cases in that year was sixty-eight. There were no wards for these cases. When he was appointed to the hospital in 1901 he was lent two beds in the male and two in the female surgical ward. There was no special theatre; a room was adapted for the purpose. This was a long remove from 1935, in which year the total number of patients who attended the ear and throat department was 3,012, and the attendances were three times as numerous as in the eye department and fourteen times as numerous as in the department for the diseases of women. Last year no fewer than fifty-nine cases of acute mastoid had to be refused admission because of lack of room—a tragedy when it was remembered what a serious condition this was. At present there were twelve beds for men, twelve for women, and four for children, together with six further beds for tonsils and adenoids cases.

Forty years ago the treatment of diseases of these regions of the body was chiefly medicinal—pastes, caustics, inhalations, gargles, sprays, and lozenges. Listerian surgery was then still in its youth, and the immense expansion of it to all the special departments of practice had not been evolved. When he was a house-surgeon at the old hospital in the Strand a single theatre sufficed for all the three surgeons in these specialties, each of them requiring it for only one half-day a week. The work of the department was now carried out by four honorary surgeons, two whole-time house-surgeons, a registrar, and senior and junior assistants, and the theatre was fully occupied every weekday except one.

Sir StClair Thomson contrasted some of the early procedures with the present, and referred in particular to endoscopy, which was carried out last year in more than two hundred cases at that hospital. When he published in 1910 the first recorded case in this country of a foreign body—a shawl pin—removed from the bronchus with the aid of endoscopy the *British Medical Journal* of that day, in a leading article, described it as a triumph of surgery. The so-called triumphs of yesterday were now the everyday routine.

Obituary

HUGH ROSS SOUPER, M.D., B.Ch.

Lecturer in Diseases of the Ear, Nose, and Throat, University of Aberdeen

We regret to announce the death on October 21st, at the age of 49, of Mr. Hugh Ross Souper, surgeon for diseases of the ear, nose, and throat at the Aberdeen Royal Infirmary, and lecturer in this subject at the University of Aberdeen. Although he had been ill for some months his death came as a shock to his medical colleagues and a wide circle of patients and friends.

Mr. Souper was a native of Aberdeen, and had a distinguished student career at the University, graduating M.A. in 1908, M.B., Ch.B. with honours in 1912 (when he won the Shepherd gold medal in surgery), and gaining honours again when he proceeded M.D. in 1920. During the war he served in France and Italy, and in the Mediterranean Expeditionary Force, with the rank of Captain R.A.M.C. ; and after the armistice he was senior medical officer to the Ministry of Pensions Hospital, Newcastle-on-Tyne. He then returned to Aberdeen, and soon distinguished himself in oto-rhino-laryngology. He was appointed assistant to Mr. Henry Peterkin in the ear, nose, and throat department at the Royal Infirmary, and succeeded him as surgeon in charge in 1935 ; he was also for some years otologist and laryngologist to the Aberdeen municipal hospitals, surgeon for diseases of the ear, nose, and throat to the Hospital for Sick Children, and aural surgeon to the Aberdeen Education Authority. Mr. Souper was a member of the Otological and Laryngological Sections of the Royal Society of Medicine, and had been president of the Scottish Otological and Laryngological Society. He joined the British Medical Association in 1914, was honorary secretary of the Section of Orthopaedics and Diseases of Children at the Annual Meeting at Newcastle in 1921, and chairman of the City of Aberdeen Division in 1934–5. In private life he was well known locally for his musical attainments, particularly as pianist and organist ; he took a prominent part in the work of the Aberdeen University choral and orchestral societies.

"F. J. N." writes:

The untimely death of Hugh Ross Souper will be felt as a personal loss by many outside his native city of Aberdeen. In Newcastle, where I write, he had many friends. After foreign service he was posted here towards the end of the war on the staff of the Military Orthopaedic Hospital, and he continued to work in the same hospital when it was taken over by the Ministry of Pensions. Before the war he had begun to concentrate on throat, nose, and ear work, and to this he returned in due course, and attained the leading place in that specialty in the Royal Infirmary and University of Aberdeen. But he was a fine orthopaedic surgeon, skilful and successful especially in dealing with nerve injuries, operations for which were required in large numbers in the early post-war years. And he was beloved by his soldier patients and popular with all ranks of his hospital colleagues.

He was a man of culture and of attainments beyond the professional. Especially in music he might have gone far had he chosen a career therein. He was not ambitious in the ordinary sense. Modest he certainly was, though none the less confident of his own judgement and capabilities. But he will be missed chiefly for those personal qualities of heart and mind of which it is the least possible to write. To those who knew him well his loss is irreparable.

Dr. E. R. C. Walker writes:

It must always be a great loss when a life of special usefulness is taken, but when that life is taken at the age of 49 the loss is doubly great. Ross Souper had added to inherent qualities of a high order and to a sound training the great advantage of many years of ripe experience. We, his colleagues, had come to look on him as a specialist of mature knowledge and skill, who was entering on the fulfilment of his professional career, so that his death seems to us not short of tragedy. It means the loss in all the fields in which he worked of a quick able mind and a sane balanced judgement. His specialty, the community, the Aberdeen Medical School, his colleagues, and the British Medical Association are all of them the poorer because of it. It is appropriate here to recall his services to the Association. His qualities fitted him very specially as a negotiator and as a chairman, and in these capacities he had few equals and no superiors among us. His chairmanship of the City of Aberdeen Division will be remembered by all who had the privilege of meeting under it for the fairness, tact, and skill with which he conducted many difficult and controversial meetings. With those who knew him well he leaves the memory of a keen intellect, a good companion, and a loyal friend.

The death of Dr. William Paul Murphy of Fitzwilliam Square, Dublin, after a few days' illness came as a great shock to his many friends. He was only 36 years of age, and up to his last illness was in good health. Educated at Clongoweswood College, Dr. Murphy proceeded to University College, Dublin, where he graduated M.B., B.Ch. in 1927. After a period as house-surgeon to Mercer's Hospital, he decided to specialize in radiology, and with this end in view went to Cambridge and to St. Bartholomew's Hospital. Having obtained the D.M.R.E. he returned to Dublin and was appointed assistant radiologist to St. Vincent's Hospital. Shortly afterwards he was also elected radiologist on the staff of the Children's Hospital, Temple Street. Finally he became radiologist to the Dublin Union hospitals, where he did much work in founding and building up the department of radiology, which, as the result of Murphy's work, is now one of the best in the city. He was a member of the British Association of Radiologists and of the B.M.A., and had recently been elected as the representative of the Radiologists' Group of the new Council of the Irish Free State Medical Union (I.M.A. and B.M.A.), but did not live to attend the first meeting. Dr. Murphy's death is a great loss to Irish radiology. The council of the Union will also miss the assistance of his keen and clear intellect and his unusual capabilities as a speaker.

We regret to announce the death of Dr. Charles Kemp, who had been in practice in the Morriston district of Swansea for the past thirty-six years. He was born at Keith, Banffshire, in 1868, and studied at King's and Marischal Colleges, Aberdeen, graduating M.A. of the University of Aberdeen in 1889, and M.B. and C.M. in 1893. He also paid a post-graduate visit to Vienna to study diseases of the eye, ear, and nose, and after gaining experience in different places settled at Swansea in partnership with Dr. Rice Morgan, whom he succeeded in 1917. Dr. Kemp was certifying factory surgeon for the Morriston area and medical officer to the Swansea Public Assistance Committee. He took an active interest in the local Caledonian Society, to which he had lately been appointed honorary physician, and was very popular and well loved in the district. He joined the British Medical Association in 1896. His death, on October 10th, is mourned by a wide circle of patients and friends.

The death took place in London, on October 19th, of Dr. W. A. Chapple, who had been Member of Parliament for Stirlingshire and Dumfriesshire, and stood again as Parliamentary candidate, but without success, in November, 1924. William Allan Chapple, the only son of a New Zealand landowner, was born at Alexandra, Otago, on July 14th, 1864. From Alexandra School he went to Dunedin University, graduating M.B., Ch.B. in 1890, and proceeding afterwards to the M.D. He obtained the M.R.C.S.Eng. and the D.P.H. of the Irish Royal Colleges in 1897. For the next ten years Dr. Chapple practised medicine in Wellington, and served as honorary physician to the Wellington Hospital. He was elected a member of the Victoria University College Council, and for some time represented Tuapeka in the New Zealand Parliament. Then, after travelling in many lands, he settled in this country and devoted himself to sociology and general politics. He was elected in the Liberal interest M.P. for Stirlingshire in 1910 until the dissolution at the end of 1918, and was M.P. for Dumfriesshire 1922–4. Dr. Chapple's published writings included papers on physical education in State schools, the extension of technology in education, and the evils of alcohol; and a small book on the fertility of the unfit, which appeared in 1904.

Medical News

The Malcolm Morris Memorial Lecture under the Chadwick Trust will be delivered by Mr. Robert R. Hyde at the Royal Society of Arts, John Street, Adelphi, W.C., on Thursday, November 5th, at 8.15 p.m. His subject is "Industry's Contribution to Public Health: Firms' Voluntary Medical Services."

The fifty-third annual dinner of the past and present students of the Leeds School of Medicine will be held at the Hotel Metropole, Leeds, on Thursday, November 19th, at 7 for 7.30 p.m., when Mr. P. J. Moir will preside. Tickets (10s. 6d. each, exclusive of wine) may be obtained from the honorary secretaries, Messrs. D. E. Mitchell and T. B. Purdy. Any preference with regard to the allocation of seats should be stated.

The annual dinner of the West Riding Association of Graduates of the University of Edinburgh will be held at the Great Northern Hotel, Leeds, on Wednesday, November 4th, at 7.30 p.m., when the guest of the evening will be Mr. W. J. Stuart. Any Edinburgh graduate resident in the West Riding of Yorkshire who may not have received an invitation will be welcome at the dinner.

The annual dinner of the Association of Certifying Factory Surgeons will be held at the Langham Hotel, Portland Place, W., on Wednesday, November 4th, at 7.45 p.m.

A meeting of the Section of Otology of the Royal Society of Medicine will be held on Friday, November 6th, at 10.30 a.m., when Dr. Douglas Guthrie will deliver his presidential address on "The Renaissance of Otology," and Dr. Rh. Blegvad of Copenhagen will read a paper on "Modern Views on Vertigo." At 4.40 p.m. the same day there will be a meeting of the Section of Laryngology, at which Dr. A. Hautant of Paris will read a paper on "Formes Anormales de la Tuberculose Laryngée Simultant le Cancer du Larynx," followed by a discussion on "The Problem of Early Laryngeal Tuberculosis," to be opened by Dr. Blegvad, Dr. L. S. T. Burrell, Sir StClair Thomson, Mr. F. C. Ormerod, and Mr. J. D. McLaggan. On Tuesday, November 10th, at 5 p.m., there will be a joint meeting of the Sections of Therapeutics and Pharmacology and Urology for a discussion on "Urinary Antiseptics (including Sodium and Ammonium Mandelate)," to be opened by Dr. M. L. Rosenheim, Dr. W. W. Payne, Dr. A. G. Signy, Mr. E. W. Riches, Mr. A. W. Cubitt, and Mr. Clifford Morson. Members of the Section of Obstetrics and Gynaecology are specially invited to attend the meeting.

The Institute of Medical Psychology announces that dates for the series of lectures on child training to be held at the Institute's clinic in Malet Place, Bloomsbury, W.C., have been rearranged as follows: Dr. Susan Isaacs, November 3rd; Dr. Maria Montessori, November 10th and 17th; Miss Lillian de Lissa, November 24th and December 1st; and Dr. Charlotte Bühler, December 8th and 15th.

The Mayor of Bermondsey will officially open the Public Health Centre, Grange Road, S.E., on Saturday, November 7th, at 3 p.m. A report of the laying of the foundation stone ceremony appeared in our issue of September 28th, 1935 (p. 596).

A conference, arranged by the Post-Certificate School, on "Post-Certificate Training for Midwives," will be held at the Royal Society of Arts, John Street, Adelphi, W.C., on Tuesday, November 3rd, at 5 p.m., when the chair will be taken by Sir Comyns Berkeley, chairman of the Central Midwives Board. The opening address will be given by the Minister of Health, Sir Kingsley Wood, and other speakers will be Professor James Young, on principles underlying post-certificate work; Miss Pye, president of the Midwives Institute, on the midwife in hospital practice and domiciliary practice; and Dr. H. P. Newsholme, on a scheme for a residential post-certificate course.

The recently constituted Committee for the Study and Investigation of Rheumatism at the Red Cross Clinic, Peto Place, Marylebone Road, N.W.1, holds quarterly meetings on the Tuesdays of the week succeeding the quarter days, at 5.30 p.m. At such meetings papers are read by various members who have been engaged on special research, and discussions follow. To such meetings any medical men who may be interested in rheumatism and its manifestations are cordially invited. Owing to a recent international congress clashing with the normal October date, the next meeting will be held on Tuesday, November 3rd, at 5.30 p.m., when Dr. W. S. C. Copeman will read a "Review of Gold Therapy in Rheumatic Disorders."

The Institute for the Scientific Treatment of Delinquency has arranged a course of sixteen weekly seminars for probation officers and social workers, to be held at the West End Hospital for Nervous Diseases, Welbeck Street, W. Four seminars on organic disease and delinquency, by Dr. T. Rowland Hill, began on October 22nd; there will be four on mental defect and delinquency, by Dr. C. J. C. Earl, and eight on psychiatry and psychotherapy of delinquency by Dr. Denis Carroll. Dates will be arranged as far as possible to suit the convenience of the class. Applications to take the course, and for details of fees, etc., should be addressed to the general secretary of the institute, 56, Grosvenor Street, W.1.

The out-patient clinic for mental disorders at the Warneford Hospital, Leamington Spa, will in future be held weekly on every Monday at 2.30 p.m. instead of monthly.

Mr. Digby Cotes-Preedy, K.C., who qualified in medicine in 1903 and was called to the Bar in the following year, has been appointed by the Lord Chancellor to be a county court judge of Circuit No. 36 (Oxford).

On October 23rd the Duke of Kent opened the Scarborough new general hospital, which has been built on the western outskirts of the town at a cost of £130,000, of which all but £15,000 has been raised since the scheme was initiated ten years ago. The new building contains 140 beds, and has been planned to allow for extensions which would double the accommodation.

The issue of *Hospitalstidende*, the organ of the Danish Medical Society, for September 15th contains a sympathetic obituary notice of Lord Moynihan by Professor S. A. Gammeltoft, director of the gynaecological clinic at Copenhagen University.

Dr. R. Fortescue Fox has been elected an honorary member of the Austrian Society of Balneology and Physicotherapy.

Guy's Hospital is to increase the number of its maternity beds from twenty-one to forty-nine. This change, which will be carried out within the next month, has been made possible by the rearrangement of beds in the medical block of the hospital.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

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QUERIES AND ANSWERS

Rigid Neck in Parkinsonism

Dr. A. H. DUNKERLEY (Westerham, Kent) writes: I should be grateful for any suggestion as to treatment in the following case of Parkinsonism following encephalitis. The patient is an old lady of 70 years, who has responded well to atropine therapy, but is troubled exceedingly with the muscular rigidity in her neck muscles, so that her head is continually bent forward at an angle where she cannot see or read anything. The atropine has been pressed as far as possible, but I wonder if anybody has devised a piece of simple apparatus for holding the head back. The head can easily be pushed back, but will only stop in an upright position for thirty seconds.

Income Tax

Replacement of Car

"F. H." bought a car for £172 in March, 1935, and for the financial year 1936–7 has been allowed £27 depreciation. The car has just been sold for £115 and a new one purchased for £178. Does the present assessment need adjusting?

*** No, because the tax for this year is based on the income and expenses of last year. But when the declaration of income is made next year depreciation should be claimed on the new car and "obsolescence" allowance in respect of the old car. The amount to be claimed will be (£172 – £115 =) £57 less the amount of the depreciation—that is, the full amount, not merely the proportion allowed for income tax.

LETTERS, NOTES, ETC.

Laboratory and Bedside

"Medical Science and Practical Medicine" was the subject of an address delivered to the University of Durham Medical Society by Professor G. H. Monrad-Krohn of Oslo. He explained that his object was not only to discuss the wonderful progress and development of modern medicine, but also to show possible pathological symptoms and signs of degeneration in medical science and practice of to-day. At first sight the terms "medical science" and "practical medicine" appeared synonymous, but too often they were antagonistic. The lecturer deplored the abyss that yawned between the laboratory and clinical science, and the lack of co-operation between laboratory workers and clinicians. In medical science he deprecated the influence of fashion, whereby mere postulates, sponsored by a fashionable creed, were too often mistaken for proven facts; also the scientific vanity which induced some ambitious workers to describe new reflexes or modifications of known diseases, solely to provide pegs in medical literature on which to hang their own names. Despite the enormous progress of medical science, the domain of aetiology was still largely a *terra incognita*, when even the cause of the common cold was not yet definitely known. With regard to practical medicine it was one of the functions of the practitioner to give to his patients what he received from medical science, and to return to science what he learned from his patients. The experience of old practitioners was often far ahead of medical science, and country doctors in Norway were prescribing cod-liver oil long before vitamins were discovered. Practical medicine was a mixture of science and art guided by knowledge, by tact, and by intuition. *Non medicamen sed medicus curat.*

Population Policy

Dr. B. DUNLOP (Putney, S.W.) writes: Sir Henry Brackenbury's address on "Maternity in its Sociological Aspects" (October 24th, p. 828) is a masterly and valuable one. I submit, however, (1) that, as Dr. Louis I. Dublin, the eminent American statistician, has indicated, an average of three children per fertile couple may be enough to maintain numbers; (2) that to oppose birth control clinics for the poor is to deny them the right to voluntary parenthood, which, as Professor Carr-Saunders contends, must now be the basis of a satisfactory population policy; and (3) that, on the average, the couples in the richer half of a nation produce children at least slightly more gifted and good-looking by heredity than the other couples do.

A Pharmaceutical Discrepancy

Mr. FRANK TAYLOR, M.P.S., writes with reference to the letter from Dr. Stuart Goldhurst under this heading (October 24th, p. 850): I have long thought that something should be done in the matter of tab. acid. acetylsal. co., as two are official: tab. acid. acetylsal. co. *N.F.* (*National Formulary*), which contains acid. acetylsal., phenacetin, and Dover's powder, and tab. acid. acetylsal. co., *B.P.C.*, which contains acid. acetylsal., phenacetin, and caffeine. It is unfortunate that two tablets having the same name should have different formulae, and the sooner one of these has a different name the better for everyone concerned.

Spa Technique at Aix

A report entitled "Les Techniques Thermales d'Aix-les-Bains et leurs Applications Cliniques," by Drs. Bertier, Blanc, and Folliet (Imprimeries Réunies de Chambéry), was prepared on behalf of the Medical Society of Aix-les-Bains for the *Réunion Scientifique* last year. The best part of it is the author's description of the technique at this famous Savoy spa, as now expanded and developed in the new State establishment. Following the practice in other countries, a school of thermal technique for bath attendants has been set up, with a qualifying examination, under the direction of the professor of hydrology at the University of Lyons.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 46, 47, 48, 49, 50, 51, 54, 55, and 56, of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 52 and 53.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 243.